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U.S. DEPARTMENT OF COMMERCE
Peter G. Peterson, Secretary

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
Robert M. White, Administrator

PROGRAM DESCRIPTION AND SUGGESTIONS FOR PREPARING PROPOSALS

THE NATIONAL SEA GRANT PROGRAM

ROCKVILLE, MD.
May 1972

PREFACE

This brochure has three purposes:

—To describe the National Sea Grant Program, including its policies and basic operating procedures.

—To tell prospective proposers how to make a Sea Grant proposal.

—To bring together in one place the essential Department of Commerce and Sea Grant provisions and rules under which Sea Grants are made so they may be understood by proposers and incorporated by reference in proposals.

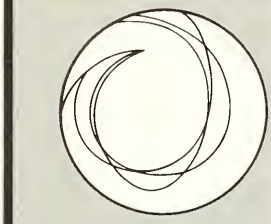
The brochure has three main parts corresponding to the three purposes. Readers interested primarily in what the Sea Grant Program is may find Part I sufficient for their purposes. Persons who wish to make proposals should study all three parts.

No single document can cover all possible questions that may arise. The Office of Sea Grant, NOAA, will provide additional information on request.

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

THE NATIONAL SEA GRANT PROGRAM

PROGRAM DESCRIPTION AND SUGGESTIONS FOR PREPARING PROPOSALS



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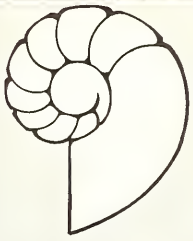

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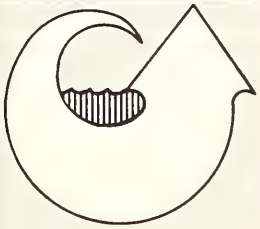

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U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

MAY 1972

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Office of Sea Grant

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About the cover:
Because Sea Grant Colleges and Institutions have as their main purpose service to their regions and states, each has been encouraged to create its own unique symbol to identify publications and services to users within its service area. Sea Grant symbols in use as of the date of publication form the cover of this brochure.

INTRODUCTION

The National Sea Grant Program was created on October 15, 1966, with the signing of Public Law 89-688, THE NATIONAL SEA GRANT COLLEGE AND PROGRAM ACT. The purpose of the Act is to accelerate national development of marine resources, including their conservation, proper management, and maximum social and economic utilization. The term "Sea Grant" was chosen to emphasize the parallel between the present needs of the nation in the marine environment and the need for development of the land at the time of the Morrill Act of 1862, which established the Land Grant Program. The Sea Grant Program follows the pattern of the Land Grant Program only to a limited extent: it provides the means through which scholars and institutions of higher education can apply their knowledge and talents to the practical needs of the nation and the world, and it includes the Land Grant concept of advisory services through which scientific research results may be most directly applied to real problems.

The National Sea Grant Program, originally assigned to the National Science Foundation, was transferred to the National Oceanic and Atmospheric Administration, U.S. Department of Commerce, in the President's Reorganization Plan #4, in October 1970. Within NOAA, the Program is administered by the Office of Sea Grant.

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PART ONE

The National Sea Grant Program

I. SEA GRANT PROGRAM SCOPE

The broad scope of the Sea Grant Program derives from the National Sea Grant College and Program Act's *Declaration of Purpose,* and *Definitions.*

Purpose

"The Congress hereby finds and declares—

"(a) that marine resources, including animal and vegetable life and mineral wealth, constitute a far-reaching and largely untapped asset of immense potential significance to the United States; and

"(b) that it is in the national interest of the United States to develop the skilled manpower, including scientists, engineers, and technicians, and the facilities and equipment necessary for the exploitation of these resources; and

"(c) that aquaculture, as with agriculture on land, and the gainful use of marine resources can substantially benefit the United States, and ultimately the people of the world, by providing greater economic opportunities, including expanded employment and commerce; the enjoyment and use of our marine resources; new sources of food; and new means for the development of marine resources; and

"(d) that Federal support toward the establishment, development, and operation of programs by Sea Grant Colleges and Federal support of other Sea Grant programs designed to achieve the gainful use of marine resources, offer the best means of promoting programs toward the goals set forth in clauses (a), (b), or (c), and should be undertaken by the Federal Government; and

"(e) that in view of the importance of achieving the earliest possible institution of significant national activities related to the development of marine resources, it is the purpose of this title to provide for the establishment of a program of sea grant colleges and education, training, and research in the fields of marine science, engineering, and related disciplines."

Definitions

This broad statement of purpose is further expanded in the *definitions* in section 204 (i) of the Act:

"For the purposes of this title—

"(1) the term 'development of marine resources' means scientific endeavors relating to the marine environment, including but not limited to, the fields oriented toward the development, conservation, or economic utilization of the physical, chemical, geological, and biological resources of the marine environment; the fields of marine commerce and marine engineering; the fields relating to exploration or research in the recovery of natural resources from, and the transmission of energy in, the marine environment; the fields of oceanography and oceanology; and the fields with respect to the study of the economic, legal, medical, or sociological problems arising out of the management, use, development, recovery, and control of the natural resources of the marine environment;

"(2) the term 'marine environment' means the oceans; the Continental Shelf of the United States; the Great Lakes; the seabed and subsoil of the submarine areas adjacent to the coasts of the United States to the depth of two hundred meters, or beyond that limit to where the depths of the superjacent waters admit of the exploitation of the natural resources of the area; the seabed and subsoil of similar submarine areas adjacent to the coasts of islands which comprise United States territory; and the natural resources thereof . . ."

Principal Activities

The three principal activities of the Sea Grant Program are *research, education,* and *advisory services.* These derive from the following language of the Act:

"The term 'sea grant program' means (A) any activities of education or research related to the development of marine resources supported . . . by contracts with or grants to institutions of higher education either initiating, or developing existing programs in fields related to the purpose of this title, (B) any activities of education or research related to the development of marine resources . . . by contracts with or grants to suitable institutes, laboratories, and public or private agencies, and (C) any programs of advisory services oriented toward imparting information in fields related to the development of marine resources . . ."

Relationship to Other Agency Programs

An inherent limitation is a requirement in the Act that the program shall be so administered "as to supplement and not duplicate or overlap any existing and related Government activities." Consequently, institutions proposing Sea Grants should make every effort to obtain support from other agencies when the research or education for which support is needed clearly falls within the purview of another Federal activity.

The Sea Grant Program maintains close liaison with other agencies, and, as a matter of routine during the review process, sends proposals to other agencies with related interests. While it is possible for Sea Grant to support a highly qualified proposal within another agency's mission interest, such support is granted only when the proposal does not duplicate the activities of the other agency.

Program Balance

The Sea Grant College and Program Act specifies that "the total amount of payments in any fiscal year . . . to participants within any state shall not exceed 15 per centum of the total amount appropriated" for Sea Grant activities for such fiscal year. This restriction is amplified by the requirement that the agency "shall endeavor to achieve maximum participation . . . throughout the United States, consistent with the purposes of this title." Consequently, the need for geographical balance must be taken into account in the process of proposal review and funding.

Subject matter balance within the overall National Sea Grant Program is another important factor. It is natural that the traditional marine capabilities and aspirations of the nation's institutions of higher education produce more proposals in some fields than in others; proposals in such fields will be more competitive than in some of the newer kinds of marine activities. Maintaining a balanced national program requires that Sea Grant funds be distributed among the many opportunities and problems important to national goals.

Non-Marine Fields

Traditional marine scientific and engineering disciplines or specialties provide a base on which Sea Grant activities in an institution can be structured, but to achieve Sea Grant objectives as stated in the Act, traditional fields must be augmented by other disciplines and specialties.

Many marine resource problems cannot be solved, or opportunities realized, without new approaches to marine and coastal legal, institutional, or economic structures. Participation is needed of research lawyers, political scientists, sociologists, social psychologists, anthropologists, public administration specialists, and economists.

Because social, legal, and economic solutions should be correlated with a firm foundation of knowledge produced by natural scientists, and with the realities of technological capability, the social scientists and law specialists must work in close harmony with natural scientists and engineers.

Sea Grant Systems Approach

The scope of the Sea Grant activities in any field may range from basic considerations to techniques for final application, encompassing the entire system involved in the particular field. For example, the aquaculture of a marine organism may require investigation into the reproductive cycle, environmental requirements, and nutrition of the organism; but it also requires the engineering of the culture system, consideration of the economic viability of the system in comparison with other sources of the organism or comparable organisms, social impact of the aquaculture development, examination of the legal regimes under which culture will take place, problems of meeting state and Federal regulations for processing the product into marketable form, and marketing preferences and methods. Similarly, an engineering proposal to place a new facility offshore should be related

to the economics of the situation, the impact on the environment, social and aesthetic considerations, and relationship to other uses of the area. This is not to suggest that a single proposal must cover all elements of the system, but it should clearly identify the place of the activity within the system. The system itself—or, more simply, the final product of the activity—must be of demonstrable value.

II. GENERAL SEA GRANT POLICIES AND PROCEDURES

Specific policies and procedures relating to research, education, and advisory services, are covered in Sections III, IV, and V. The following apply generally throughout the Sea Grant Program:

Basic Sea Grant Approach

The National Sea Grant College and Program Act provides for Sea Grant "colleges," and "programs," an implicit recognition by the Congress of the need for both continuing and short-term activities. The intent of the Act, to involve the nation's academic community in the practical problems and opportunities of the marine environment, further is emphasized by the definition of a "sea grant college" as "any suitable public or private institution of higher education . . ."

The systematic, multidisciplinary approach necessary to achieving Sea Grant goals (see the following sections) requires a kind of organization and reorientation to which most institutions of higher education are not accustomed. Once the organization is created, and the university's colleges and departments become skilled at working together in a programmed, focused manner, it is important to maintain continuity so long as the quality and relevance of the university's Sea Grant work warrants support. Marine resource and environmental problems and opportunities are so pervasive and complex that it will take decades for the Sea Grant mission to be accomplished in any single marine area of the nation. Consequently, Sea Grant administrative procedures have been so structured that an institution which qualifies for continuing support can maintain continuity, with specific projects phasing out on completion and new ones taking their place as priorities in the institution's region may dictate.

The emphasis, however, is not on continuity as such, but on the application of the institution's talents to specific activities directly relevant to the area it serves. Such relevance must be determined by close interaction with public and community leaders.

Two continuing Sea Grant categories of support, called *"Institutional"* and *"Coherent Project"* grants, are actually for support of a large number of related multidisciplinary activities within a single institution or combination of institutions. Each activity under these categories is subjected to detailed scrutiny and evaluation by NOAA's Office of Sea Grant, and each activity is supported or rejected on its individual merits. Combining the activities within a given institution under a single Sea Grant is a matter of administrative efficiency and convenience, both to NOAA and the grant recipient. Continuity of support depends solely on the quality and consistency of the university's efforts in meeting the goals of its approved Sea Grant activities. If quality, consistency and productivity are high enough after at least three years of Institutional Support, the university may qualify as a Sea Grant College.

In addition to the need for continuing availability of strong institutional Sea Grant teams, there are many relatively short term problems and opportunities which can be solved or realized by individual researchers or project leaders, or by small disciplinary groups. For this reason, the continuing Sea Grant programs are supplemented by a specific category of *Sea Grant Projects,* with grants awarded for a definite period of time, for accomplishing a specific activity.

The grant categories are described in detail starting on page 11.

In complying with the requirements of the Act to ensure both geographical and subject matter balance within the national program, NOAA considers the number, kind, and location of *activities,* not the number of grants. To illustrate, in a typical fiscal year, 50 Sea Grants may be made in 35 states. Twenty grants may be made for Institutional or Coherent Project support, and 30 for individual Projects. But the 50 grants may support the conduct of nearly 600 separate activities in over 50 subject matter fields, encompassing research, education, and advisory services. Each activity is individually reviewed, evaluated and approved, and each carries its own budget.

Review Procedures

The Sea Grant Program uses the process of critical review by peers. Normally, from four to ten scientists or engineers are asked to review the proposal. Reviewers are chosen from a variety of sources, including universities, industry, and Federal or state agencies. Sea Grant Office Program Directors use the reviews as guidance in making judgments on proposal acceptability. In addition to the purely scientific or technological reviews, other reviews may be sought from potential users of the information to be developed.

For institutional or coherent program proposals and large, complex projects, an actual on-site review usually is required. Such reviews are made by specialist teams, representing the various fields of the proposal, led by Sea Grant staff personnel. The site visit teams probe more deeply into the proposed activity, review facilities, and provide an opportunity for the project leader to go into his proposal in more detail than usually is possible in a written proposal. Often, proposals are modified by mutual agreement after such reviews. While the modification may be a narrowing of scope, a shorter time-table, a lower budget, or some redirection of objectives or method, site reviews teams also have recommended to both proposer and the Sea Grant Office that the work be expanded and accelerated because of its high potential value.

Multidisciplinary Participation

No aspect of marine affairs can be fully considered in isolation from other aspects. Hence, Sea Grant policy is to encourage, and to press as necessary, for genuine multidisciplinary activities when made necessary by the desired result. Such multidisciplinary "team" participation is a requirement under Institutional (or Coherent Project) Support, and is desirable to varying degrees, depending on the subject, under Project Support.

Cooperative Activities

All Sea Grantees are encouraged to enlist the cooperation of all appropriate entities within their areas on matters of mutual interest or concern. Such entities should include state or local agencies, business and industry, organizations, Federal laboratories and installations, and educational institutions. In a research activity, cooperation by researchers with potential users of the results will help to ensure the early application of the research. As appropriate, cooperating entities may participate in the proposal and be funded for their portion of the work.

Industry and Sea Grant

The essential concept of the Sea Grant Program is the involvement of the academic community in practical problems. Nevertheless, Sea Grants may be made directly to business and industry. NOAA considers the involvement of profit-making organizations in the National Sea Grant Program to be very important. First, such involvement is the best means of keeping a research or training project down to earth, firmly based on economic or employment reality, or on the state of the art in industry; second, profit-making organizations are one of the principal users of information developed under Sea Grant research, and the principal employers of persons trained or educated under Sea Grants.

Sea Grant, therefore, strongly encourages the participation of business and industry in activities supported in academic and other not-for-profit institutions. Such participation may take several forms, for example:

—Joint research activities with research personnel of the industry working directly with researchers at the university or institute.

—Provision by industry of expert consultation, facilities, equipment, supplies, or other services.

—Cooperation in work-study activities through which industry provides on-the-job experience as part of a structured curriculum, or summer employment to students.

Joint university-industry activities in all three examples began early in the Sea Grant Program and have been very successful. Some participating industries have moved into commercial mariculture as a consequence of their participation in mariculture research; others have had the pick of graduating students with whom they became acquainted in cooperative education ventures. The examples are only illustrative; nearly any form of industry-university cooperation is appropriate under Sea Grants.

Although grants usually are not made directly to industry, a participating industry may be compensated with Federal Sea Grant funds by the Sea Grantee for goods or services provided as an integral part of a cooperative arrangement. Sea Grant is not a way in which industry should ex-

pect to make a profit; compensation under cooperative arrangements is a way of helping industry to recoup out-of-pocket costs. It is not expected that all cooperative expenses will be compensated; a participating firm also is expected to make a substantial contribution to the joint venture without compensation.

Industry contributions, when not compensated, are legitimate matching funds for the Sea Grantee. Contributions of services, facilities, supplies, or equipment may be used for matching, with costs based on the participating industry's normal accounting procedures.

Arrangements for university-industry cooperative programs must be included in university proposals, and are subject to the same criteria as university proposals without industry participation.

This policy applies only to joint university-industry proposals; it does not preclude an institution from direct purchase of goods or services from business or industry. Such purchases must be included in the proposal and fully justified.

Under justified circumstances, a Sea Grant or contract may be made with a for-profit firm, either directly by the Office of Sea Grant, or through another NOAA program acting as agent for the Office of Sea Grant. Such a circumstance might be the final step in application of a methodology that will proof-test and demonstrate the economic vaue of a procedure, and hence lead immediately and directly to new business or new employment, not only for the participating firm, but for a segment of industry. The Sea Grant purpose in such an instance is to accelerate the commercial marine application by helping to reduce the risk to the participating firm.

When such a direct grant or contract is made, the proposal is subject to the same reviews and criteria as those of the more routine grant applications.

All information developed under a Sea Grant or contract is available to the public, regardless of the for-profit or not-for-profit nature of the grantee institution.

Support to Small Business and Industry

Many marine businesses and industries are too small to support research on the resources on which they depend. Sea Grant is particularly interested in research and advisory service proposals that will add to the efficiency, employment, and stability of such relatively small enterprises.

International Activities

The objectives of the Sea Grant Program relate primarily to the marine environment as it affects United States interests. Such interests may be shared in some instances with one or several other nations. While Sea Grant should be viewed as a domestically-oriented program, international activities may be appropriate when justified in terms of United States interests and the purposes of the Sea Grant Act. At the borders of the United States and its territories, environmental and resource research problems necessarily are common to a considerable degree with those of neighboring countries. Other nations may share an interest in a particularly promising field of marine development and have experience and competence to contribute. When cooperative research projects are developed jointly between a qualified United States institution and appropriate institutions in another country, such projects may be eligible for Sea Grant support, including reimbursement of the foreign participant, *provided* the foreign participant meets or exceeds the one-third matching requirement for its share and *provided* the foreign share of Sea Grant funds does not exceed 50 per cent of the total Federal Sea Grant cost of the activity. In such cases, the United States institution is the Sea Grantee; the U.S. institution reimburses the other-nation participant. Criteria and justifications, as described in this brochure, apply equally to all participants whether domestic or foreign.

III. SEA GRANT RESEARCH

Distinguishing Characteristics

The distinguishing characteristic of Sea Grant-sponsored research is that it must contribute to the advancement of one or more of the purposes specified in the Sea Grant Act, as stated in Section I. That is, it must be research with a specified end use as its objective, justified in terms of the utimate value and utility of the results to be achieved.

The term "applied research" often is used in connection with Sea Grant, with consequent misunderstanding. "Application" describes the end result and may not describe the research itself; it depends on the state of knowledge in a particular field, and what must be learned before an economic or social result can be obtained. For example, before economically viable aquaculture of many species is

possible, it may be necessary to solve fundamental problems of the physiology of reproduction, the etiology of parasites, the chemistry of culture media, behavioral patterns, nutritional requirements, or genetic characteristics. Commercial aquaculture is the desired result, but a single research activity may be directed to only one piece of the total puzzle, and may be basic in nature. To qualify as Sea Grant research, the project must, however, be related to a clear possibility of culturing a commercially valuable organism, or it must contribute to the solution of a defined problem related to a Sea Grant purpose.

Within this general principle, research proposals will be considered in any field, discipline, or specialty. Adherence to the principle should not be interpreted as a requirement for conservatism in research proposals. Sea Grant purposes cannot be achieved without innovation, and innovative research may fall in what is sometimes termed a "high risk" category. Such risks are acceptable when warranted by the potential of what may be achieved.

Programmed Research

Commonly, scientific research is "open-ended." That is, the researcher follows a line of investigation for as long as necessary to achieve his purposes. He may have no definite idea, when the research is initiated, how long it may take to obtain results. Sea Grant research must be structured with reasonable milestones which permit at least a reasonable estimate of the total effort, cost, and time necessary to achieve the proposed result. The proposal should show where the researcher expects to be in completion of his research plan in one year or two, depending on the length of the effort. Renewal of research projects, including those which are part of institutional or coherent programs, depends on results achieved within a reasonable time frame. It is recognized that programming of research is difficult, and is an unaccustomed procedure for many scientists. Further, the nature of the research process frequently requires adjustment of goals and dates. Even so, an initial approximation should be made to aid in evaluation of the proposal. The Sea Grant Office will be quite flexible in accepting warranted adjustments as progress of the research may indicate.

Background in New Research Fields

The scope of Sea Grant research, and the urgency of many national and regional problems of the marine environment, require that many newcomers move into marine fields, particularly in engineering, technology, and the social sciences. The normal procedure for a scientist or engineer developing a proposal in a new field is to study the literature. While this is a necessary step, it must be recognized that the literature in many fields is hopelessly behind the state of knowledge or the art. It is usually necessary to complete the background through direct interaction with persons actively working the field.

Mechanisms to find out "who is doing what" are not always adequate. It is assumed that researchers routinely will consult such sources as the Science Information Exchange of the Smithsonian Institution, but it may not occur to persons whose primary sources have been the scholarly journals to consult the technical and trade press in the proposed field. Such publications carry frequent notes about ongoing research, as do the newsletters published in the marine field. Many proposals from newcomers fail because of "inadequate homework," with the proposer offering an activity that already has been accomplished, or on which other researchers are working.

Engineering Research

Engineering research is of particular importance to the National Sea Grant Program because engineering (in the broadest use of the term) usually is the means through which scientific research results are applied to problems and opportunities. The development and conservation of marine resources have suffered largely because engineers have not shown sufficient initiative or interest in applying their special talents to the often-mundane problems faced by natural scientists. Under the Sea Grant approach, it is important for engineers to work as part of a team composed of natural and social scientists, bringing their special engineering competence to bear in systems integration and sub-systems development. For example, the mariculturist may be faced with problems of hydraulics, water quality, environmental controls, optimum cost-effective construction and operations, and systems flow. None of these engineering requirements is large-scale, highly challenging, or dramatic, but all are essential if mariculture is to be viable. On a somewhat more difficult scale is the need for engineering innovation in marine

activities. Better and more cost-effective engineering is needed in nearly every aspect of marine affairs. Imaginative research proposals which may have an element of high risk, but equally high payoff if the research succeeds, will be especially welcomed.

Criteria for Sea Grant Research

The first criterion is the appropriateness for Sea Grant support of the proposed research. The proposer should answer such questions as, "Who needs this information?" "Who will put it to use?" "To what use will it be put?" and, "How do you know the answers to these questions?" This latter question implies that intuition is not enough; answers should be based on definite information.

Assuming the Sea Grant validity of the proposed research, the credentials of the principal investigator or project leader become paramount. The Sea Grant Program does not insist on purely academic credentials; a record of accomplishment is more impressive. The record may be in the form of publications in the subject matter field or related fields, in the form of patents, or in any other form that will permit evaluation of the investigator's ability.

With a qualified investigator, the method and the programming of the research plan are next considered.

In summary, an ideal Sea Grant research activity should be relevant to Sea Grant purposes, conducted by an investigator with the highest qualifications, working toward a clearly established goal in a finite period of time with milestones established to show progress.

IV. SEA GRANT EDUCATION AND TRAINING

The National Sea Grant College and Program Act of 1966 specifies education and training as an important part of the National Sea Grant Program. Although the Act does not impose limitations on the kinds and numbers of persons to be educated or trained, Sea Grant educational activities are constrained by the need to supplement, and not duplicate, the activities of other Federal agencies, and are limited by the realities of the manpower market.

Manpower Projections

Various attempts have been made to project national requirements for marine resource manpower, but the attempts have been frustrated by a great number of variables. The state of the national economy at a given time, the uncertain potential for economic returns from specific marine activities, the size and breadth of Federal programs, the scope and funding of state programs, rapidly changing marine technology, and the availability of trained persons from non-marine fields are all variables in predicting manpower demand. There is at present no well defined national basis for arriving at numbers of persons that will be needed in a particular marine field for any future period.

An additional factor in developing educational programs is the number of persons already in the educational system and the relationship of this number to the best estimates of present and short-range manpower needs.

Given the great uncertainties of manpower requirements, the Sea Grant Program is conservative in the number of educational and training activities it supports, and emphasizes those fields in which additional specialists clearly are or will be needed. For ease of reference, education and training activities are discussed by category in the following sections.

Graduate Programs in the Natural Sciences

The Sea Grant Program does not, as a general rule, support graduate education programs in physical, biological, chemical, or geological oceanography. Under well-justified circumstances, an institution may be given relatively short-term support to improve the quality of an existing graduate program when its relevance to a national marine requirement is clear. The Sea Grant Program does not support graduate (or undergraduate) programs in the basic sciences, i.e. physics, chemistry, earth sciences, biology, or mathematics.

Graduate Programs in the Social Sciences

As the national ocean program grows, more social scientists will be needed. There is opportunity in the Sea Grant Program for a limited number of well-designed graduate courses in the marine applications of the social sciences and humanities.

Graduate courses or seminars in marine affairs, marine law, and marine resource economics are a part of most Sea Grant institutional programs, and additional activities in these fields require strong justification.

Ocean Engineering

Ocean engineering has emerged as a specialty, at least in name, in the past decade. As commonly

used, it refers to the practice of engineering in the marine environment, whether the engineering is civil, mechanical, electrical, chemical, industrial, or nuclear. Ocean engineering usually is considered to be a graduate subject. Within the Sea Grant Program, it is an integral part of most institutional educational programs, although some separate projects for course development have been initiated. Because of uncertainties in the future national manpower requirements and the number of courses already available, proposals must have strong justification in terms of need for graduates as well as the ability of the proposing institution to produce them.

Graduate Student Support

The Sea Grant Program does not award fellowships or scholarships, except for a very limited number which may be awarded by Sea Grant Colleges. However, the Program does recognize the important contributions that may result from graduate research, and provides funds to grantees for graduate research assistantships as a part of specifically approved research projects. Even though there is an educational aspect to such support, it is considered as Sea Grant research. Such assistantships are not made available directly to applicants; they are requested as a part of an institution's proposal to conduct specified research, and the institution or principal investigator hires the graduate assistant from its list of applicants at established university rates; the National Sea Grant Program neither approves nor endorses the application of any individual for an assistantship.

A proposing institution also may include graduate teaching assistantships on the same basis.

Undergraduate Programs

To qualify as a researcher, graduate degrees are required by most employers. Further, marine activities are an overlay of education and experience on a basic education in the particular specialty or discipline. It is, therefore, difficult to produce a bachelor of science or arts who has any great hope of employment above the technician or junior assistant level. Terminal baccalaureate programs which purport to prepare a student for employment as researchers or highly qualified specialists generally are not considered appropriate for Sea Grant support.

An exception to this general Sea Grant policy is the baccalaureate ocean engineer. Because of the emphasis on highly sophisticated engineering and engineering science by the academic engineering community in recent years, a partial void has been created between the engineering technician and the senior engineer. This void may be filled in a few exceptional cases by engineers with four or five years of schooling structured to fill a definite need in a national industry. To qualify for Sea Grant support, the need first must be demonstrated by the proposer through consultation with industry, the proposal must be geared to the needs of the industry and confirmed by correspondence with potential employers, and the size of the proposed classes adjusted to the particular manpower market. Normally, such courses are conducted with the industry's cooperation.

Marine Technician Programs

A marine technician is a person who has acquired the specific vocational skills and background that will fit him or her for immediate employment in a marine field upon graduation. Sea Grant technician programs commonly are for two years and generally are conducted in community or junior colleges or technical institutes. Technician programs of shorter or longer duration also are considered.

Marine technician specialties include oceanographic aide, marine electronics technician, aquaculturist, seafood science and technology technician, commercial fisherman, marine biological field or laboratory technician, marine engine and equipment mechanic, and commercial underwater technician. This list is not all-inclusive, and additional specialists may be developed.

Sea Grant technician training is *vocational* in nature. Even though some students may decide to go on to higher education, it must be assumed that student technicians are studying for a vocation and that they expect to graduate into jobs. To qualify for Sea Grant support, it is necessary for the proposer to show that a manpower market exists for the particular category of technician to be trained, and that the curriculum is vocational and oriented to the existing market. General surveys are not sufficient justification; the proposer must show, through interaction and correspondence with employers, a strong probability that all qualified graduates of the proposed program will be able to find jobs.

If properly justified in terms of the manpower market and the ability of the school to produce

qualified graduates for that market, any marine-related technical specialty may be eligible for Sea Grant educational support.

Duration of Support

It is not the purpose of the Sea Grant Program to fund an educational or training activity in perpetuity; the purpose is to initiate and support qualifying activities to a point where they will be essentially self-supporting or included in normal institutional budgets. Each case is considered on its individual merits, but as a general rule two years of support is considered sufficient to get a program well launched. with the possibility of support at a rapidly declining rate for an additional year or two when the value of the program, as shown by its employment record and comments of employers, clearly warrants additional support.

Pre-College Education and Training

Because working in the marine environment requires specialized skills or education not normally obtainable at high school level, Sea Grant generally does not support programs below the college or post-high school level except when justified as marine vocational training.

Innovative Education and Training

The Sea Grant Program does not assume that traditional education and training methods or standard curricula are necessarily the ultimate for producing specialists to meet national needs. Innovative proposals, experimental courses, experience projects, and new ideas are welcome so long as their objectives accord with the purposes of the Sea Grant Program.

V. SEA GRANT ADVISORY SERVICES

"Advisory Services" is a general term for the variety of means by which the results of scientific research or engineering development are communicated to those who will apply the results to obtain economic or social benefits. The methods may include publications, conferences and seminars, mass media, or personalized extension services.

Feedback Through Advisory Services

In addition to dissemination of useful information, a well designed and staffed Sea Grant Advisory Service is also an important source of information and guidance to the Sea Grantee, providing a "feedback loop" through which problems and opportunities, as seen by user communities, may be communicated to program administrators and researchers.

Advisory Service Concepts

Sea Grant Advisory Services do *not* deal only in information developed under Sea Grants; they collect and prepare for dissemination, from *any* source, information of use to the communities they serve. Such information may be obtained from Federal laboratories, state agencies, business and industry (when not proprietary in nature), from other universities—whether or not part of the Sea Grant system—and from other nations. For reasons of credibility, as well as common courtesy, the source of a particular item always should be given full credit.

Advisory Services should be tailored to the needs of the specific region served by the Sea Grantee. In addition to business and industry, Sea Grant Advisory Services are expected to provide information and assistance to state and local agencies, and to the interested public. The essence of Sea Grant Advisory Services may be summed up as "self-help," with the information and assistance designed to enable or assist the self-help process.

Eligibility for Advisory Service Activities

Normally, Advisory Services are conducted by Sea Grant Institutions. In addition, separate Sea Grant Advisory Service Projects are considered when such projects would fill a regional need.

Identification of Audiences

Proposals for Advisory Services should identify, in specific terms, the audiences or communities to be served, and should show a history of prior contact with such user communities, at least to the extent of determining needs and the most cost-effective means of filling those needs.

VI. SPECIAL REQUIREMENTS AND LIMITATIONS

Matching Funds

The National Sea Grant College and Program Act of 1966 states:

> "The total amount of payments in any fiscal year under any grant to or contract with any participant in any program to be carried out by such participant under this title shall not exceed 66-2/3 per centum of the total cost of such program. For purposes of computing the amount of the total cost of any such program furnished by any participant in any fiscal year,

the Foundation shall include in such computation an amount equal to the reasonable value of any buildings, facilities, equipment, supplies, or services provided by such participant with respect to such program (but not the cost or value of land or of Federal contributions.)"

In accordance with this requirement, institutions proposing Sea Grant activities must propose an entire program or project, identifying those portions for which NOAA funds are requested, and those for which the institution itself will pay. The NOAA portion may not exceed two-thirds of the total cost. The remaining one-third must be from non-Federal sources. Further, there is no upper limitation on the percentage of matching funds. The Office of Sea Grant often receives proposals in which the non-Federal matching funds are substantially more than the required one-third.

The language of the Act permits matching funds "in kind" as well as in cash. Allowable "in kind" items include:

—Existing salaries and fringe benefits of investigators and others, when paid from non-Federal sources. However, the percentage of salary allowable must not exceed the percentage of time actually spent on the Sea Grant activity. Further, the salary rate must be that established by the institution; Sea Grant funds may not be used to augment salary scales, nor to pay consulting fees over and above the salaries of participating scientists and engineers who are integral to the proposal.

—Expendable supplies and equipment used in the Sea Grant activity when purchased with other than Federal funds.

—Equipment purchased with non-Federal funds, when the equipment is to be used solely or primarily in the Sea Grant activity, and when the equipment is not included in calculations of indirect cost rates. The full initial cost of equipment may be used for matching during the lifetime of the Sea Grant.

—Ship time provided with non-Federal funds may be used as a matching cost, but ship time may not be included in the Federal funds requested. (See next heading.)

—Industry participation, state agency participation, and other non-Federal participation may be used in calculating matching costs. Donated supplies, services, building space or equipment may be costed at the rates normally used by the cooperating entity. Cash contributions are the best kind of matching; a number of state legislatures appropriate funds specifically to match Federal Sea Grants.

—Research, education and training, or advisory service activities entirely funded by non-Federal sources, for which no Sea Grant funds are requested, may be used in their entirety as matching; however, to qualify as matching, the activity must be relevant to Sea Grant and of a quality that would entitle it to Federal support under criteria stated in this brochure if Federal funds were requested.

—In calculating matching costs, care must be taken to avoid double use of a given item. For example, the Act permits use of an amount equal to the reasonable value of facilities, but most facilities are included in calculations of the indirect cost rate and hence generally cannot be listed in matching costs as a separate item.

Ship Time and Land or Building Use

The Act states:

"No portion of any payment . . . to any participant in any program to be carried out under this title shall be applied to the purchase, construction, preservation, or repair of any building, dock, or vessel."

There are no circumstances under which land rental or purchase are allowable costs under Federal Sea Grant funds, but land rental may be used as a matching item. Also, building repair or rental, when paid from non-Federal funds, are allowable as matching items when specifically a part of the total proposal.

Ship time, maintenance, lease, rental, and preservation are allowable *only* as matching items paid from non-Federal funds.

The necessity for researchers to work in and on the marine environment is recognized. Under certain circumstances, when fully justified in the proposal, Sea Grant funds may be allowed for shipboard salaries, and for expendable supplies in connection with Sea Grant shipboard activities. All other elements of ship operations such as maintenance and depreciation are excluded.

It should be noted that the provisions of the Act apply to the ship itself, but not to scientific or engineering equipment which may be placed aboard a ship to conduct scientific or engineering research, or training. In general, any item integral to the

ship hull or to ship operations, without scientific or engineering purposes, is excluded from Federal Sea Grant funding. Maintenance, preservation and repair of such items also are excluded.

VII. SEA GRANT PROGRAMS

Three categories of support are available for the conduct of Sea Grant activities: Institutional, Coherent Project, and Project. In general, Institutional and Coherent Project grants are made with expectation of renewal, so long as the grantee maintains a high level of quality and relevance in its activities. Sea Grant Projects generally are for a single grant item but may be renewed under certain conditions; each renewal is negotiated individually.

Institutional Support

Sea Grant Institutional Support is awarded to an institution of higher education (or a combination of institutions) which has an existing broad base of competence in marine affairs. To qualify, the institution must make a positive, long-range commitment to Sea Grant objectives, as evidenced by commitment of the institution's own resources in the form of matching funds, creation of the organization necessary for management of the Sea Grant Program, establishment of interdisciplinary research teams, and development of advisory service mechanisms for strong interaction with marine communities in its region.

In making a proposal, including renewal proposals, the institution must justify its activities individually, in accordance with Sea Grant criteria, placing particular emphasis on development of interrelated activities which comprise an integrated, well-managed program relevant to the region it serves.

A Sea Grant institution is expected to provide intellectual and applied leadership in assisting its region to solve problems and to realize opportunities of its marine environment. To the extent possible, an institutional program should involve all appropriate elements of the institution, whether colleges or departments; and devise cooperative or mutually supporting programs with other institutions of higher education, and with Federal and state agencies, local agencies, and industry. An institutional program should have substantial strength in the three basic Sea Grant activities: research, education and training, and advisory services. Some elements, such as two-year marine technician training, may be accomplished through cooperative programs with two-year colleges when such training programs are fully justified by regional needs. Or, for example, if the institution has no law school, it may develop a joint program with an institution that does.

Assuming proper quality and quantity of performance, the Sea Grant Program expects to fund Sea Grant institutions annually, consistent with the quality of their work and the relevance of their activities. This does not mean, however, that a mediocre activity in a Sea Grant institution receives priority over a high quality individual project proposal from another source.

Sea Grant Colleges

Sea Grant Colleges are designated from among institutions of higher education receiving Institutional Support. The designation is based on quality, quantity, and productivity of performance by the institution in the categories of research, education, and advisory services; the degree and nature of cooperation with and service to its marine communities; the exercise of leadership in the institution's region over a period of not less than three years under Institutional Support; and the efficiency and competence of its Sea Grant program management.

The designation Sea Grant College symbolizes a mutual recognition of continuing responsibility, both by the Department of Commerce and the institution so designated, to develop and maintain the excellence and public utility of the institution's Sea Grant program.

By the award of Sea Grant College status, the Department of Commerce expresses its confidence in the demonstrated dedication and competence of the Sea Grant College by assigning priority of support to the College, within the limits of overall Federal priority and fiscal considerations, renewable as continued performance by the College may warrant.

The Sea Grant College accepts with such designation the responsibility for the continued pursuit of excellence in marine research, education, and public service through advisory programs, and the exercise of leadership in its region in assisting and supporting other institutions and agencies, both public and private, in the development of programs for the proper use and protection of the marine environment.

Designation as a Sea Grant College is *not* automatic after the prescribed period under Institutional Support, but is a matter of the most serious consideration by the Department of Commerce and its Sea Grant Advisory Panel after definitive review of the institution and its Sea Grant program by the Panel, the staff, and outside experts.

Project Support

Sea Grant Project Support is awarded to an individual investigator or project director through his organization. The support is for a clearly defined Sea Grant activity to be conducted over a definite period of time, to achieve a specified goal. The project may be in research, education, or advisory services.

Activities of outstanding merit, which require more time than anticipated for completion, may be eligible for renewal. Normal project grant periods are one and two years. In some cases, the proposal may be accepted for a two or three year period, subject to annual funding on submission of a progress report and an updated budget; such cases are negotiated individually.

Coherent Project Support

Intermediate between the Institutional and Project Support programs are Coherent Projects. These have two main purposes:

1. To bring into the Sea Grant Program institutions of higher education which have strong core capability in some aspects of marine affairs, but which do not at present qualify (or wish to qualify) for Institutional Support. The purpose of Coherent Project Support in such cases is to enable the institution to apply its existing competence to its regional problems and opportunities while developing the broader base or the organization that will lead to Institutional Support. This program category requires a definite commitment on the part of the institution to develop toward institutional status, and to present a multi-project, multidisciplinary program involving the existing competence of the institution in a unified, or coherent, attack on well-defined local or regional problems in localities where sufficient competence to meet marine needs does not exist. Such a program should include research, education, and advisory services to the extent of the institution's capability.
2. To bring into the Sea Grant Program, on a more or less continuing basis, qualified entities which have rare or unique capability in a specialized field of marine affairs. Such entities need not be institutions of higher education.

While the statements throughout this booklet apply, as appropriate, both to Institutional Support and Coherent Project proposals, *such proposals are are not encouraged without extensive prior consultation with the Sea Grant staff*. Each continuing program in these two categories is a special case, subject to extended negotiation and is developed cooperatively between the institution and agency staff to meet a clear national or regional need. Whether an institution has the will and the capability to grow to fill such a requirement, and whether a region needs such a facility, must be determined by a series of reviews and negotiations before the institution can be encouraged to apply for support.

In nearly every case, Institutional and Coherent Project proposals have followed participation by the institution through regular Sea Grant projects which enabled the Sea Grant staff better to evaluate the institution's capability and the institution to determine its own objectives and regional requirements. The more specialized Coherent Projects, which are not precursors to institutional support, are very few in number and are restricted to entities with a unique or rare capability.

Specific guidelines for preparing either institutional or project proposals start on page 14.

VIII. ELIGIBILITY FOR SEA GRANTS

In the language of the National Sea Grant College and Program Act, Sea Grants may be made for the purpose of "initiating and supporting programs at Sea Grant Colleges and other suitable institutes, laboratories and public or private agencies . . ."

The Act further states: "the term 'sea grant college' means any suitable public or private institution of higher education supported pursuant to the purposes of this title which has major programs devoted to increasing our nation's utilization of the world's marine resources . . ."

Institutional Support Eligibility

According to the language of the Act, a Sea Grant College must be an institution of higher education. Because Institutional Support is a necessary precursor to Sea Grant College designation, Institutional Support is limited to institutions of higher

education. Such institutions need not, however, be single universities. They may be consortia of institutions or university systems.

Project Support Eligibility

"Suitable institutes, laboratories, and public or private agencies," in addition to educational institutions, are eligible for Sea Grant project support. In the past, Sea Grant has provided support for state agencies, private foundations and institutes, and county organizations.

While *agencies* of state, county, or local government are eligible, grants are not made to state, county or city adminsitrations for use of the state, county, or city as a whole. Nor are grants generally made to legislative bodies at any level. Proposals from state or local agencies are considered in competition with proposals from all other sources, and generally are not regarded as continuing programs.

Two-year colleges and institutes are eligible directly for project support. In addition, many two-year colleges have joined with Sea Grant Institutions in their states, obtaining aid in the form of faculty support, facilities, or matching funds through such arrangements, and receiving support as an integral part of the institutional grant.

Any combination of qualified entities may propose a project jointly.

Federal agencies or laboratories are not eligible for direct Sea Grant support, but cooperative arrangements with eligible grantees may be established in individual cases. Such cooperative arrangements should be initiated by the proposer.

PART TWO

Preparing a Sea Grant Proposal

IX. PROPOSAL PREPARATION

Informal Proposals

Preparation of proposals is difficult, time-consuming, and often unrewarding. The Office of Sea Grant is willing to consider a proposal informally before a formal document is submitted. In this way, a proposer can learn whether his project is suitable for Sea Grant, or whether it is more appropriate for submission elsewhere. If inappropriate for Sea Grant, the proposer is saved the labor of formal preparation and the inevitable waiting for decision.

Informal or preliminary proposals may be submitted in letter form, or as brief documents. They should state the objectives and methods of the project concisely, include a rough budget and time schedule for project completion, and the background of the project leader. The Project Summary and Suggested Budget forms shown on pages 20 and 22 may be used for this purpose.

If suitable for Sea Grant submission, the proposer will be advised by the Sea Grant Office to proceed with development of the formal proposal. If not suitable, the proposer will be so advised. Such advice from the Sea Grant Office does not constitute approval or disapproval; it signifies only that the Sea Grant Office considers the proposal to be either suitable for Sea Grant consideration or unsuitable in relation to Sea Grant criteria. If submitted formally, the proposal still will be subject to full review procedures. Many perfectly valid proposals must be declined because they are not sufficiently in accord with Sea Grant objectives, because of program balance requirements, or simply lack of funds. Further, informal advice from a Sea Grant Program Director that a proposal is inappropriate does not prevent a proposer from filing a formal proposal if he chooses to do so, and an informal proposal is not a requirement; this method of operation is designed to be helpful.

Prior to preparing a proposal, the Department of Commerce General and Special Provisions for grants, and the Publications Guidelines, included in Part Three of this publication, should be read.

Proposal Deadlines

There are no deadlines for Sea Grant proposals; proposals are considered as received. Nevertheless, the realities of fiscal year cycles and staff workload place some constraints on proposal timing that should be considered.

Review procedures may take from a month to several months, depending on the complexity of the proposal and its degree of difficulty. Review timing is not entirely within control of the Sea Grant Office. In some fields of activity, the number of qualified reviewers is limited, and they review the proposal at their own convenience. Actual processing time, once a favorable decision is made by the Program Director, may take several weeks depending on the time of year and the proposal load at the time. There is a tendency for work loads to peak in spring and summer because so many proposers ask for summer or academic year starting dates.

Proposals for renewal of Sea Grant projects should be made at least four months before the renewal date; proposals for renewal of Institutional and Coherent Project support should be made from four to six months before the renewal date.

Number of Copies

The actual number of copies of proposals used

by the Sea Grant Office varies according to the number of reviews the staff program director considers necessary. Occasionally, reviewer comments are mixed, and the program director seeks additional comments. It is therefore difficult to fix a number that will suit all proposals. In general, an original (signed) and ten (10) copies of a Project proposal will suffice. For Institutional or Coherent Project proposals, both of which require site visits as well as mail review, twenty-five (25) copies plus the signed original should be sent. In addition, several extra copies should be retained by the proposer, to be sent if needed.

Proposal Language

Proposals for Sea Grant activities should be written in as brief a compass as the proposal permits. Justifications should be specific, not couched in generalities; that is, a discussion of the food potential of the research need not be accompanied either by a dissertation on the importance of food to the growing population—a well recognized fact that may be assumed—or of citations of commission or committee reports that say food is important.

In writing the proposal, it is best to keep in mind an imaginary reviewer who will comment to the Sea Grant Office on the quality and validity of the proposal. This reviewer may be assumed to be knowledgeable about national goals and needs, and an expert in the field covered by the proposal. He may also be assumed to be a very busy person who has little patience with verbosity or fuzzy language. In many respects, he may be viewed in the same way one would view a prospective referee for an important paper proposed for publication in a scholarly journal.

Consistency of Format

For ease of processing, a certain consistency in the presentation of information within a proposal is necessary. The amount of "boiler-plate" has been kept to the minimum necessary for processing efficiency, but that minimum is important. Omission of social security numbers, for example, may require additional correspondence to obtain them; they identify the principals in the computerized management system. Failure to provide a compliance form will hold up a grant until one is obtained. The detail requested in budgets may not always seem to be relevant to the proposal, but is required by overall Federal reporting procedures. Consequently, adherence to the suggestions for proposal preparation will expedite handling of the proposal.

Format Details Common to All Proposals

Sea Grant Project proposals may be relatively simple, but proposals for Institutional or Coherent Project Support, which involve several projects and an organization structure, necessarily are somewhat more complicated. For this reason, detailed suggestions for the various categories are given in separate sections. Common to all proposals, however, are the title page, the compliance form, the project summary form, and the budget summary form.

TITLE PAGE

Bound proposals, such as those for Coherent Projects, Institutional Support, or very large and complex Projects, will have separate covers; for most Sea Grant Projects, the Title Page may serve as the cover. (For bound proposals, the Office of Sea Grant suggests the kind of binding known as "plastic comb.")

A typical Title Page is illustrated by a mythical project proposal on page 18. A Coherent Project or Institutional proposal Title Page would differ principally in the designation of kind of proposal, and in the number of endorsements necessary; some institutions are multi-campus types and require signatures of an officer from each. Should more room be needed, the Title Page may be continued on a separate sheet.

—Note that the identification of the institution is complete, with proper mailing address and zip code.

—The title is brief and explanatory. It may appear in numerous summaries and bibliographies without further explanation, and so describes the activity adequately.

—It tells the Sea Grant Program Director about any simultaneous or past submission to other agencies, including the person handling the proposal, if known. (This information helps in inter-agency coordination.)

—It explicity states that, in making the proposal, the principal investigator or project director, and the institution, accept and will comply with the general provisions applicable to grants to educational institutions, as stated in Part Three of this brochure.

—The project leader and the institutional repre-

sentative are identified by full name, title, organization, telephone number, address, and social security number. The reason for having both names and signatures is that the project leader is responsible for conduct of the grant, but the institution itself is responsible for ensuring that facilities, matching funds, and supporting services, as described in the proposal, will be made available. The original copy should carry personal signatures. If the Institutional Representative is not the administrative person able to discuss details of indirect costs, etc., the name of the proper person is given. His signature is not necessary.

Leave the reverse side of the Title Page blank and un-numbered.

COMPLIANCE FORM

The Assurance of Compliance with Title VI of the Civil Rights Act of 1964 (see page 19.) should be reproduced in its entirety, completed and *signed* as page 1 of the original of the proposal. Leave the reverse side of the compliance form blank and un-numbered.

SEA GRANT PROJECT SUMMARY

The use of the Sea Grant Project Summary Form is somewhat different for Institutional and Coherent Project, and Project proposals, but the guidelines for filling it out are consistent for each category of proposal. *It is an extremely important form, because it is the only part of the proposal many persons will see;* hence, their judgments of the activity may hinge entirely on the form. The form may be extracted from the proposal by the Sea Grant office and reproduced for a number of purposes. It will be translated into computer language and appear in a variety of computer read-outs. It should be completed with thought and care.

General instructions are given on the reverse side of the form. Program control form categories used in Sea Grant are given on page 23. The proposed project, will fit into one of these. If it fits into more than one, select the most relevant. Leave the reverse side of Project Summary forms blank and un-numbered. See pages 20 and 21.

SUGGESTED BUDGET SUMMARY

Use of the budget summary varies somewhat according to the type of proposal, but guidelines for filling it out are consistent for each category. Note that it is a *summary only;* it does not fulfill the requirement for justification of individual budget items. See page 22.

Under A, *Salaries and Wages,* actual numbers of personnel should be shown in the blank spaces following the category letters (a., b., etc.). Total times they will spend on the project should be shown in man months in the appropriate boxes. The divisions are by calendar year, academic year, or summer, and should be used according to the types of appointment on which the individuals have been hired, i.e. full year, academic year, or summer months. The calendar year column is not for totalling academic and summer man-months.

In calculating the share of salaries, actual time to be spent on the project should be used. If a researcher will spend one-fourth of his time on the project during the academic year, and his academic year salary is $15,000, the calculation will be $15,000 divided by four, and time shown will be nine months divided by four.

Definitions for the various personnel categories are as follows, numbered to correspond with the budget summary:

1.a The *Project Leader* is responsible for the conduct of the activity. He may be the principal investigator for a research project, the coordinator of an educational project, or the director of an advisory service activity. For an Institutional or Coherent Project, he may be the Sea Grant Director. If responsibility is shared equally among two persons, they should be listed as co-project leaders.

1.b *Faculty or staff associates* are professional persons who are full time on the faculty or staff.

2.a *Research associates* are professional persons participating in the project who are part time employees, persons retained solely for the project, or staff members of participating organizations.

(*Consultants* should be listed under "other costs" because fringe benefits or some elements of indirect costs may not be computed on their compensation.) Details with curricula vitae, including social security number and date of birth, for all persons in categories 1.a., 1.b., and 2.a. should be given in the appropriate part of the proposal.

2.b *Graduate student assistants* are part or full time students who hold at least a bachelor's degree or equivalent, who are enrolled in a program leading to an advanced or professional degree, and who are integral to the project as research assistants.

2.c *Undergraduate students* may be employed as

aides or helpers on a Sea Grant Project either on salary as part-time employees, or on an hourly basis. An undergraduate student is a person enrolled either part or full time in a course leading to a degree, including an Associate Degree in the case of students in two-year programs, or a certificate in the case of some vocational students.

2.d *Secretarial-clerical* is a category for office personnel.

2.e *Technical* is a category for technicians, shop personnel, and other persons with special but nonprofessional skills.

2.f is for "other" persons not included in categories a. to e.

Fringe benefits are those customarily paid by the grantee institution, following its usual practices in the payment of such benefits.

Permanent equipment is any equipment with a cost of more than $200 and/or an expected lifetime in excess of one year. Major items of permanent equipment costing $1,000 or more should be itemized. If there are not enough lines on the summary form, write in "see list" and use only the total. The full list, with justification for each item, should be in the body of the proposal.

Expendable supplies and equipment should be described in the body of the proposal if unusual in nature or amount. Only the total is shown on the budget summary.

Show the basis for *travel* in the body of the proposal, e.g. X trips at Y average cost for Z days. Per diem for travel must be based on the regulations of the proposing institution and included in the travel budget total. Domestic travel includes travel to all U.S. possessions or trusts, including Puerto Rico, the Virgin Islands, the Trust Territories, Guam, or Samoa. For purposes of work directly related to the project (*not* including conferences held by professional societies), travel to Canada or Mexico also may be listed as "domestic." All other travel anywhere outside the U.S. and its possessions is considered as "foreign travel" and must be justified, and specifically approved in advance.

For allowable expenses under *Publication and documentation costs,* see page 31.

Under *Other costs,* list such items as computer time, reimbursement of participating organizations outside the proposing institution, equipment rental, consultants, etc. Note that ship time, facilities rental, and other costs not allowable under the Federal portion of the grant may be listed as "other costs" in the grantee share column.

The basis for computing *Indirect costs* should be stated in the body of the proposal. Note that indirect costs apply to the grantee share column as well as to the Sea Grant funds column.

On the line for *Total costs, rounded,* round off the total to the nearest 100 dollars.

OFFICE OF SEA GRANT CLASSIFICATIONS

The classifications listed below are those used in the Sea Grant management system. No listing of classifications in a broadly-based, diverse program can be completely satisfactory, and activities may be proposed that do not fit perfectly into any single category; in such a case, choose the single category that best represents the greater part of the activity, and use the actual words, not the numbers.

The classification list appears in NOAA Form 1, and is referred to in item 17 of the "Instructions for Filling Out the Sea Grant Project Summary." NOAA Form 1 is sent to grantees *after* a grant is made and does not play a part in preparation of proposals.

Suggestions for Sea Grant Project Proposals

Title Page, Compliance Form, Project Summary Form, and Summary Budget Form should begin the proposal, in that order, numbered as pages 1, 2, 3, 4. Please do not use or page-number the reverse side of the form pages.

If the proposal is a long one, a table of contents should be prepared and placed immediately after the Compliance Form.

Starting on the first page after the forms, state the background of the proposal concisely, answering the basic questions stated on page 7 of this brochure under the heading, "Criteria for Sea Grant Research," or, if it is an educational project or advisory service project, state the justification in relation to the criteria described in the brochure sections relating to those activities.

State the objectives of the project. If the proposal is for more than one year, show the goals expected to be achieved at the end of the first and second years. Don't strain or skew the language to "sell" the project's relevance; be brief, precise, and—above all—realistic. State objectives and goals that can actually be achieved within the proposed level of effort and duration of the activity.

Describe the approach to be used in meeting

Suggested Title Page

Date of This Proposal:
April 5, 197X

A Project Proposal to:

The Office of Sea Grant
NOAA, U.S. Dept. of Commerce

Submitted by:

Institute of Marine Biology, Winsocki Univ.
College City, New State 00000

Title:

Application of Prodsponder Culture Techniques to the Commercial Mariculture of Foitvoinder irregularis

Amount requested from Sea Grant:	$16,400
Matching funds proposed:	$ 9,250
Duration of proposed activity:	1 year
Proposed starting date:	January 1, 197Z
Year of Activity, if renewal:	New Proposal
Previous grant amount, if renewal:	Not Applicable

Proposal also submitted to RANN, National Science Foundation, March 2, 197X, Dr. John A. John.

We, the undersigned, certify that, in the event this proposal is accepted, in whole or in part, our signatures on this proposal constitute acceptance of and compliance with statutes and regulations of the U.S. government and the U.S. Department of Commerce as detailed in Part Three, "The National Sea Grant Program, Program Description and Suggestions for Preparing Proposals," dated June 1, 1972, and that pages 29 to 44 of that publication are incorporated by reference as part of this proposal.

Principal Investigator
(Signature)

Donald J. Scientist
(Typed Name)

047-96-7552
Social Security Number

727 Old School Drive
College City, New State 00000

Phone (800) 745-4577

Institutional Representative
(Signature)

Walter O. Administrator
(Typed Name)

992-77-7744
Social Security Number

845 New School Drive
College City, New State 00000

Phone (800) 745-4570

For administrative details contact Mr. Roger Bookman, 808 Old School Drive, College City, New State 00000, Phone (800) 745-4222

U. S. DEPARTMENT OF COMMERCE
National Oceanic & Atmospheric Administration

ASSURANCE OF COMPLIANCE WITH THE NONDISCRIMINATION CLAUSE applicable to:

_____

(insert in the space above the title, date, and/or other identification of the application/proposal to which this assurance is applicable)

_____

Name and address of organization submitting application/proposal

(1) hereby warrants, covenants, agrees, and assures that it will conduct the program/project described by the above identified application/proposal, or as it may be revised or modified prior to any grant award or subsequent to any grant award, in compliance with all requirements of the "recipient" imposed by or pursuant to the Nondiscrimination clause appended thereto, which clause shall also be incorporated into any grant awarded on the basis of such proposal, and

(2) agrees and acknowledges that this assurance of compliance is a prerequisite condition to approval of the proposal or any grant or grant modification or amendment extending any Federal financial assistance pursuant thereto, that any such Federal financial assistance which may be extended to it by the U.S. Department of Commerce will be in reliance on the representation made by this assurance and that the United States shall have the right to seek Judicial enforcement thereof, and that this assurance of compliance shall be binding upon it, its successors, assignees, and transferees.

_____
Date

_____
Signature of official authorized to sign this assurance on behalf of the above identified organization

_____
Typed Name

_____
Title

NOAA FORM 90-2
(5-71)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

FORM APPROVED.
DECEMBER 31, 1972
OMB NO. 41-R2600

SEA GRANT PROJECT SUMMARY

(Limit all information to this page)

PROJECT NO.	PROJECT TITLE ☐ NEW ☐ CONTINUING ☐ CHECK IF SEPARATE PROJECT GRANT	DATE INITIATED, IF CONTINUING
GRANT NO. *(Office)*	OLD TITLE *(If different)*	DATE OF THIS FORM
INSTITUTION		ESTIMATED COMPLETION DATE

PRINCIPAL INVESTIGATOR AND COLLEGE OR DEPARTMENTAL AFFILIATION	% TIME	ASSOCIATE INVESTIGATOR	% TIME

FUNDS EXPENDED TO DATE		LAST YEARS FUNDING		PROPOSED FUNDING		RELATED PROJECTS *(By numbers)*
FED.-SEA GRANT	MATCHING	FED.-SEA GRANT	MATCHING	FED.-SEA GRANT	MATCHING	
$	$	$	$	$	$	

PART OF UNIVERSITY PROGRAM	OFFICE OF SEA GRANT CLASSIFICATION

OBJECTIVES:

HOW INFORMATION WILL BE APPLIED *(Be specific)*:

ACCOMPLISHMENTS DURING PAST TWELVE MONTHS *(Not more than one sentence per accomplishment)*:

(Do not use more space.)

NOAA FORM 90-2

INSTRUCTIONS FOR FILLING OUT SEA GRANT PROJECT SUMMARY

1. PROJECT NUMBER - Project numbers will be made up of a letter-number system. A sample number is E/A-2. The first letter indicates an education project. Other letter types permissible here are: T for Technician Training; R for Research and Development; A for Advisory Service; and M for Program Management. Following the slash, the letter A of the example above would stand for aquaculture. Hence, this project would be the second in a grouping of aquaculture education projects. In other examples, R/L-3 would be the project number for the third law-research project, and T/D-1 would be the first project for technician training of divers.

2. GRANT NUMBER - Leave blank. For office use only.

3. INSTITUTION - Insert name of institution receiving grant, using unambiguous abbreviations wherever possible. For example, University of Rhode Island should be written as U.R.I. Oregon State University should be entered as Oreg. St. U. distinguishing it from Ohio St. U.

4. PROJECT TITLE - The up-to-date title should be inserted here. The box marked "New" or "Continuing" should be checked to indicate whether this is a continuing project, begun under a previous Sea Grant, or whether this is a new Sea Grant Project. Under "Old Title," insert the title of this project if it was identified differently in previous proposals.

   If this proposal is for a Project award (not part of an Institutional or Coherent) check the box marked "Check if separate Project Grant."

5. DATE INITIATED, IF CONTINUING - Insert the date that the grant was first awarded if this is a continuing grant.

6. DATE OF THIS FORM - Insert the date this form is being prepared.

7. ESTIMATED COMPLETION DATE - Insert the estimated date this project will be completed. It may not be the termination date of the grant.

8. PRINCIPAL INVESTIGATOR AND COLLEGE OR DEPARTMENTAL AFFILIATION - Insert the Principal Investigator's name and his college departmental affiliation. For example, Dr. Littal Buggs, Biology Dept. If the P.I. is a faculty member of a participating institution collaborating with the institution receiving the grant, enter the name of his institution also. For example, if Texas A&M is receiving the grant, but the investigator is from the University of Houston, the entry should be Dr. Leagle Shark, Law School, University of Houston.

9. % TIME - Insert percentage of time he or she will devote to this project. This cannot be zero.

10. ASSOCIATE INVESTIGATOR - Insert the name of the Associate Investigator (if any) and his discipline. For example: Dr. Bleeding Hart, Sociology.

11. % TIME - See number 9.

12. FUNDS EXPENDED TO DATE - If this is a new project enter 000. If this is a continuing project, insert in the box "Fed.-Sea Grant," all the Federal Sea Grant Funds that will have been expended on this project through all prior years including the amount awarded last year for the current operating grant. In the box titled "Matching," insert all the matching funds that will have been attributed to this project by the end of the current operating grant.

13. LAST YEAR'S FUNDING - If this is a new project, enter 000. If this is a continuing project, in the box "Fed.-Sea Grant," insert the amount received from the Sea Grant award for this project last year. In the box titled "Matching," insert all the matching funds provided for this project last year. If this project was initiated last year, then the entries in these two boxes will be the same as the entries for Funds Expended to Date.

14. PROPOSED FUNDING - In the box "Fed.-Sea Grant," insert the amount being requested as a Sea Grant Award for this project for the coming year. In the box titled "Matching," insert the proposed matching funds for this project for this coming year.

15. RELATED PROJECTS - (Applicable to Institutional and Coherent Proposals only) - Insert here the project numbers of the other projects, if any, that are directly related to this project. For example, if this sheet is for an aquaculture project and there are other related aquaculture projects, engineering, economics or law, etc., projects included in this proposal that bear directly on this effort, they should be listed.

16. PART OF THE UNIVERSITY PROGRAM - (Applicable to Institutional and Coherent Proposals only) - Insert here the project grouping title under which this project appears in the Budget Activity Sheet. For example, the title of this project might be "Thermal Effluent Dispersion." It may be one of several projects grouped under the University's general heading of "Pollution" on the Activity Sheet. In this example, "Pollution" would be inserted here.

17. OFFICE OF SEA GRANT CLASSIFICATION - Insert here the classification (words, not numbers) from the Sea Grant Control Form categories provided (NOAA Form 1), under which this project best fits. For example, a research program investigating DDT in the environment would fall under Pollution/Pesticides (item LS(2) of the Sea Grant Control Form categories). Some projects may fit into more than one category. Pick the best single one. For instance, in the example given above, if the main thrust of the research were focused on how DDT affects biological life, a better classification might be Pathology of Marine Organisms,(item 1Q). Frequently, the entry in this box will be the same as the entry in the previous box labeled "Part of the University Program."

18. OBJECTIVES - In two or three sentences, the objective of this project should be entered here. The entry should begin with the words, "The objective(s) of this project is(are)...". A sentence or two of background may be included if space is available. Under no circumstances should the entry exceed the space provided.

19. HOW INFORMATION WILL BE APPLIED - Clearly and concisely indicate how the information derived from this program will be applied and what need it satisfies.

20. ACCOMPLISHMENTS DURING PAST TWELVE MONTHS - This is one of the most important items on this form. Please be concise and succinct. Every effort should be made to keep each accomplishment limited to one punchy sentence that will be understood by laymen.

SUGGESTED SEA GRANT BUDGET FORM

Name of Project Leader(s) | Duration

Grantee Institution

	S.G. Man-Months			Grantee Man-Months			S.G. Funds	Grantee Share
A. SALARIES AND WAGES	Cal	Acad	Summ	Cal	Acad	Summ		
1. Senior Personnel								
a.___(Co) Project Leader(s)								
b.___Associates (Faculty or Staff)								
Sub-Total								
2. Other Personnel								
a.___Research Associates								
b.___Graduate Student Assistants								
c.___Undergraduate Students								
d.___Secretarial-Clerical								
e.___Technical-Shop								
f.___ _____								
TOTAL SALARIES AND WAGES								
B. FRINGE BENEFITS (When Charged As Direct Costs)								
TOTAL SALARIES, WAGES, AND FRINGE BENEFITS (A&B)								
C. PERMANENT EQUIPMENT _____								
_____								
TOTAL PERMANENT EQUIPMENT								
D. EXPENDABLE SUPPLIES AND EQUIPMENT								
E. TRAVEL								
1. Domestic-U.S. and its possessions								
2. International								
TOTAL TRAVEL								
F. PUBLICATION AND DOCUMENTATION COSTS								
G. OTHER COSTS								
1.								
2.								
3.								
TOTAL OTHER COSTS								
TOTAL COSTS (A through G)								
INDIRECT COSTS (on Campus ___% of _____								
(off Campus ___% of _____								
TOTAL INDIRECT COSTS								
TOTAL COSTS								
TOTAL COSTS ROUNDED_____								

SEA GRANT RESEARCH CLASSIFICATIONS

I. Marine Resources Development

A. Aquaculture

01. Aquaculture—crustaceans
02. Aquaculture—finfish
03. Aquaculture—mollusks
04. Aquaculture—other animals (specify)
05. Aquaculture—plants

B. Living Resources, other than Aquaculture

06. Commercial fisheries—biology
07. Biological Oceanography
08. Pathology of Marine Organisms

C. Mineral Resources

09. Geological Oceanography
10. Mineral Resources—other (specify)

D. Marine Biomedicinals & Extracts

11. Enzymes
12. Biomedicinals
13. Marine Extracts—other (specify)

II. Socio-Economic & Legal Studies

A. Marine Economics

14. Marine Economics

B. Ocean Law

15. Ocean Law—coastal
16. Ocean Law—international
17. Ocean Law—other (specify)

C. Marine Recreation

18. Recreation—sports fisheries
19. Recreation—other (specify)

D. Socio-Political Studies

20. Socio-Political Studies

III. Marine Technology Research & Development

A. Ocean Engineering

21. Life Support Systems
22. Seafloor Engineering
23. Vehicles, Vessels, and Platforms
24. Materials and Structures
25. Coastal Engineering
26. Engineering—Aquaculture
27. Dredging
28. Ocean Engineering—other (specify)

B. Resources Recovery & Utilization

29. Behavioral Sciences
30. Commercial Fisheries—technology
31. Diver Engineering
32. Diver Physiology
33. Manned Submersibles
34. Man-in-the-Sea (specify)
35. Seafood Science & Technology

C. Transportation Systems

36. Ports, Harbors and Offshore Terminals
37. Transportation Systems—other (specify)

IV. Marine Environmental Research

A. Research and Studies in Direct Support of Coastal Management Decisions

38. Coastal Zone Management—Social Sciences
39. Coastal Zone Management—Natural Sciences and Engineering

B. Ecosystems Research

40. Ecosystems Research

C. Pollution Studies

41. Pollution—oil spills
42. Pollution—pesticides
43. Pollution—thermal and radioactive
44. Pollution—metals
45. Pollution—other (specify)

D. Environmental Models

46. Environmental Models—physical processes
47. Environmental Models—biological processes
48. Environmental Models—other (specify)

E. Applied Oceanography

49. Applied Chemical Oceanography
50. Applied Physical Oceanography

SEA GRANT EDUCATION CLASSIFICATIONS

V. Marine Education and Training

A. College Level

51. Course Development—Chemical Oceanography
52. Course Development—Geological Oceanography

53. Course Development—Physical Oceanography
54. Course Development—Economics
55. Course Development—Law
56. Course Development—Biology
57. Course Development—Pathology
58. Course Development—Seafood Technology
59. Course Development—Fisheries
60. Course Development—Aquaculture
61. Course Development—Ocean Engineering
62. Course Development—Other (specify)

B. Vocational Marine Technician Training

63. Commercial Diver Training
64. Oceanographic Technician Training
65. Aquaculture Technician Training
66. Commercial Fisheries Training
67. Technician Training—Other (specify)

C. Retraining Program

68. Engineering retraining
69. Technician retraining

D. Other Education

70. Education—Other (specify)

SEA GRANT ADVISORY SERVICES CLASSIFICATIONS

VI. Advisory Services

A. Extension Programs

71. Extension Agent Services
72. Extension Course Programs
73. Extension Programs—Other (specify)

B. Other Advisory Services

74. Conferences, Institutes, etc.
75. Public Education Programs
76. Publications, Audio Visuals, etc.
77. Advisory Services—Other (specify)

SEA GRANT PROGRAM MANAGEMENT CLASSIFICATIONS

VII. Program Management and Development

A. Program Administration

78. Program Planning
79. Program Administration
80. Program Logistic Support

B. Program Development

81. New Applications Development

the objectives and goals of the project.

Justify the budget.

Give the *curricula vitae* and supporting credentials of principal project personnel, including a list of other current grants or contracts. Clerical and technical personnel need not be included.

Add a bibliography.

Appendices, if required, may include supporting documents, correspondence with users or cooperators, related or complementary proposals to other agencies, memoranda of understanding, etc. It is not desirable or necessary to include endorsements except by persons directly concerned with the project either as cooperators or users.

Because the credentials of the principal investigator or project director are a key element in assessing the potential of a proposal, it is important to include all relevant detail in *curricula vitae* that will permit evaluation of the individual's qualifications.

Suggestions for Sea Grant Institutional and Coherent Project Proposals

Because each Institutional Program or Coherent Project involves a substantial commitment of both funds and time on the part of the proposing institution and the Government, such proposals are subject to detailed review and evaluation including a visit to the proposing institution by a review team established specifically to review that proposal. In addition, all or parts of the proposal are sent to other reviewers for comment by mail. Not all reviewers are interested in or competent to review technically all parts of a multi-activity proposal, but all reviewers must be aware of how the activities with their competence or interest fit into the overall program. For this reason, proposals for Institutional or Coherent Project support should be prepared in two volumes. Volume I is a relatively brief overview of the entire program and is for the use of all reviewers. Volume II goes into sufficient detail for review of each proposed activity by the principal investigator's peers. Proposal writers should assume that all reviewers will read all of Volume I, but each reviewer will read only the portion of Volume II that will assist in his specialized review.

To assist the reviewers, and to relate the two volumes, both volumes should start with identical

title pages and contain identical tables of contents, as illustrated on page 27. Dollar amounts in the tables of contents are the funds requested from Sea Grant and the matching funds proposed by the institution.

In multi-activity proposals, it is important to note that the individual activities need not have the two-third Federal/one-third institutional matching so long as the totals of all activities (as shown on the budget summary sheets for the entire proposal) meet the matching requirement.

The budget summaries for the entire proposal should follow the table of contents in each volume. For Institutional and Coherent Project proposals, two budget sheets are requested. The first is the budget summary by object class as shown on page 22. The second budget sheet is a breakdown of the entire proposal by education, research, and advisory services, as shown on page 28, using the OSG Classifications (page 23). For this purpose, the second subset of classifications, denoted by capital letters, is used.

VOLUME I

The introduction should include a brief description of the program's central theme or themes for the reader who may be unfamiliar with the institution's past history of Sea Grant participation. The introduction also should include a short description of how the program is administered (organization chart included), and *very* briefly, how other institutions or industrial firms are participating. The introduction should be limited to no more than five pages.

Background: In this section, the background and motivation can stem from several sources; e.g., the area in which the grantee is located has certain unique features which can be exploited for identified kinds of useful research; the area has certain economic needs which possibly can be met by identified research that will contribute to new or expanded industry if available resources are properly used; the team is particularly interested in, and capable of, important contributions—as a team—to the solution of certain universal problems (oil pollution, power utilization, etc.). Motivations also stem from the institution's own needs in education, training, and advisory services, and from requests for help from state or local resource managers.

Goals: There should be a detailed discussion of the aims and goals of the proposed research program and they should be clearly related to the motivations. Specific developmental goals may be identified; the questions to be addressed and answered by the research to achieve such goals should be clearly defined. Other types of goals may include curricula improvement or initiation of teaching and training methods, and information dissemination.

In summary, what are the general and specific objectives of the program? A rational discussion of goals, properly developed, should force the proposer to think in concrete and specific terms and enable the Sea Grant Program Office to judge the competence and capabilities of the proposer to develop a successful program.

Approach: A logically developed, integrated proposal should contain a concise discussion of the methods to be used in answering the questions posed. Specific points to be addressed should include a description of what actual work will be done, how the team is planning to go about its program, and how the various disciplines will be coordinated. Care should be taken in Volume I to set down the *framework* of the program, but the *details* of each task or project included in this framework should be left to a discussion of that task in Volume II.

A good program must reflect well thought-out and clearly identified goals, and coordination of the disciplines to be involved in achieving these goals. It must show that the program is well motivated in terms of area needs, and uniqueness of physical and biological features of the area. Finally, it must show that each task has been carefully selected for high probability that the work will achieve practical results. Quite frequently the proposal will not include, for the first year, initiation of all the tasks required to achieve the goals. It is important, however, that the proposal make recognition of the needs for these additional tasks in the framework and give some indication of how voids will eventually be filled.

Reporting Progress: For continuing tasks, the proposal should relate the progress achieved (since the last proposal was prepared) with the goals, thus providing a measure of the success of the previous year. This reporting of progress should be in terms of milestone achievements as they were outlined in the previous year. Since renewal pro-

posal preparation often may begin six months or more prior to the actual renewal date, the timing cycle in the first year or two of institutional or coherent project support may make it difficult to demonstrate solid achievements. By the third and fourth year, principal investigators will be reporting on the 12 months previous as part of the preparation cycle and this difficulty will disappear. Further, since the site visit is normally scheduled quite close to renewal time, opportunity will then be available to relate significant new results occurring after proposal preparation. (The requirement for this information in summary form in this section of Volume I should not be confused with a requirement for a detailed annual report, as described on page 32.)

The entire opening section of Volume I (following the introduction) should be limited to no more than 25 pages.

Grant Period: By prior arrangement with the Sea Grant Office, directors managing mature programs may prepare Institutional or Coherent Project proposals covering periods of two or more years. Grants, however, will normally be for only one year, with a tentative commitment to fund at a specified level for the succeeding years covered by the proposal. Even when two-year or longer programs may be approved, Volume I is required for every annual grant renewal, although a complete new Volume II is not required for each approved year of the proposal.

Ensuing pages of Volume I: For each activity (project) in the proposal. Volume I should contain a completed Project Summary Form (page 20.), followed by a Budget Summary Form (page 22.).

VOLUME II

Voume II should contain a Table of Contents and two budget summary sheets identical to those described for Volume I.

The first section of Volume II should identify the principal program managers and their particular qualifying abilities for the assignments. Management in this case means technical management and coordination of the various research teams.

The second section of Volume II should contain project write-ups on the individual research tasks of the proposal. Coherence for the research tasks has already been shown in the proposed program in Volume I, and need not be repeated. Each individual project write-up should follow the format described for the overall proposal, i.e., it should address motivations, goals, and methods. In addition, project descriptions should include a bibliography and other details not pertinent to the discussion of the overall research program. The individual project descriptions should, in summary, be comparable to a separate Sea Grant Project proposal as described on page 17, and should contain enough detail for meaningful review by the investigator's peers. Each projct description should be followed by an individual project budget identical to that in Volume I.

The third section of Volume II should contain the *vitae* of participants in alphabetical order, followed by other appropriate information to assist reviewers in assessing merit, quality, and need. For example, letters of agreement with cooperating institutions, requests by State entities for assistance, and any documents needed to illuminate the overall proposal or specific activities should be included.

Final Steps in Proposal Preparation

It should not, perhaps, be necessary to state the obvious, but review of several hundred proposals over the past few years indicates that it is.

Recheck the arithmetic.

Correct the spelling and review the syntax; it is disconcerting to receive a proposal for mariculture of an animal when its name is not spelled correctly, and muddled English does not engender confidence.

Proofread the proposal.

On copies submitted, check to be sure that all pages have been collated, are legible, and are in the proper order.

Be sure the postage is sufficient.

And finally, summon up patience. Repeated inquiries to the effect of "how's our proposal doing?" do not accelerate the review process.

TABLE OF CONTENTS

Identical Tables of Contents should appear in both volumes. The purpose is to help the reviewer work from volume to volume most easily. Part I of the Table will contain general program information and will differ in content between Volume I to Volume II. But Part II of the Table will have identical project headings for both volumes, with only page numbers differing. In this way, a reviewer reading a project summary in Volume I can most easily find greater details about the same project in Volume II by referring to the Table of Contents page number.

PART I PROGRAM INFORMATION

Page Numbers		*Section*
Vol. I	Vol. II	
4	—	Budget
6	—	Introduction
11	—	Overall Program Description
—	3	Program Management
—	270	Personnel Vitae

PART II PROJECT SUMMARIES

		Project Number, Title & Cost	*Project Leader*
23	27	*A/F-2—Fisheries Advisory Program ($13,000-$6,000)**	A. Winner
		R/M-4—Development of Chesapeake Bay Management Model ($10,000-$0)	A. Hopeful

* For assigning project numbers, refer to instructions for filling out the Project Summary Form on page 20.

** (NOAA funds—Matching)

ACTIVITY BUDGET SHEET

(Summary Totals by Activity)

	NOAA Grant Funds	*University Matching Funds*
Program Management		
Program Administration	$ 30,000	$ 30,000
Program Development	40,000	10,000
Marine Education & Training		
College Level	60,000	120,000
Vocational Marine Technician Training	25,000	20,000
Marine Resources Development		
Aquaculture	100,000	15,000
Marine Biomedicinals & Extracts	20,000	10,000
Ocean Law	20,000	10,000
Marine Technology Research & Development		
Ocean Engineering	75,000	10,000
Marine Environmental Research		
Pollution	150,000	20,000
Advisory Services		
Extension Programs	95,000	85,000
Other Advisory Services	75,000	20,000
TOTAL	$690,000	$350,000

PART THREE

General Provisions

Note: Some material in this part repeats statements made in Parts One and Two for the reason that Part Three is incorporated by reference in proposals as stated on page 18, and hence must be complete in itself.

U.S. DEPARTMENT OF COMMERCE

GENERAL PROVISIONS

(Applicable to grants to educational institutions under The National Sea Grant Program)

Provision No.	*Title*	*Page*
1.	Sea Grant Publication Guidelines	29
2.	Reports Required Under Sea Grants	32
3.	Guidelines for Submission and Dissemination of Environmental Data Collected Under Sea Grants	33
4.	Fiscal Reports	34
5.	Program Administration	35
6.	Access to Records and Right to Audit	36
7.	Principles for Determining Applicable Direct and Indirect Costs	36
8.	Additional Condition for Institutions of Higher Education	38
9.	Cash Advances	38
10.	Rights to Invention	39
11.	Nondiscrimination	40
12.	Statutory Limits on Payment of Sea Grant Funds	43
13.	Title to Equipment	43
14.	Officials Not to Benefit	44

1. SEA GRANT PUBLICATION GUIDELINES

The end product of scientific and engineering research is information, and research results are not fully realized until they are available to users in the marine community. The National Oceanic and Atmospheric Administration strongly encourages its grantees to disseminate results of NOAA-supported research as widely as possible in order to further the progress of marine science, engineering, and management.

In addition, the National Sea Grant College and Program Act of 1966 requires that Sea Grant awards develop *useful* information. The Act specifically provides for the development of programs of instruction, practical demonstrations, publications, and other communications "with the objective of imparting useful information to persons currently employed or interested in the various fields related to the development of marine resources, the scientific community, and the general public."

General Publications Guidelines

A. The necessity for appropriate widespread dissemination of information resulting from a Sea Grant is implicit in *all* such grants.

B. The project leader, or institutional coordinator or director is responsible for ensuring appropriate dissemination of information resulting from Sea Grants.

C. Publication in regular scientific, engineering and other professional journals should be sought as appropriate to the subject and timeliness of research results; publication in multiple outlets is desirable to the extent permitted by general practice within the particular field, and by the policy of the publication concerned. Specialized editorial treatment that may be required to obtain multiple outlet publication is encouraged.

D. In addition to communication through normal scientific and engineering journals, publication also should be sought in the trade and technical press, including local and regional specialized publications, whenever this might impart useful information to prospective users.

E. Every effort should be made to present all information in the form and through the media most appropriate to the subject and to the audience. In some cases, this may require special "information packaging;" for example, the translation of scientific information useful in the culture of a particular shellfish into language understandable to a shellfisherman who has no scientific background. This step—the translation of scientific information directly into commercially applicable knowledge—is especially important in Sea Grants.

F. Sea Grantees should keep in mind the value of news and feature releases through the mass media as a means of keeping prospective users aware of useful developments and to satisfy the statutory requirement for keeping the general public informed.

Research Reports

Reports of research results take a variety of forms. In some cases, institutions publish results in the form of special reports or "occasional papers." In other cases, institutions have developed series devoted primarily to reporting Sea Grant research results. In still other cases, reports are produced when the results are not suitable for publication in the regular literature, when timeliness is a factor, or when more details and background information are required than would be desirable in an article in the regular literature.

Publication in all these forms is entirely appropriate for Sea Grant purposes. However, because report publication ordinarily does not ensure sufficiently wide dissemination of the information to some parts of the community, special efforts must be made to place in the hands of potential users reports on information developed under Sea Grant as described below under "Distribution and Announcement."

The Committee on Scientific and Technical Information (COSATI) of the U.S. Federal Council for Science and Technology has developed a publication called "Guidelines to Format Standards for Scientific and Technical Reports Prepared By or For the Federal Government," as an aid in format and standardization to make report processing and dissemination more uniform. Sea Grantees should consider these guidelines in the development of their own report formats. Copies of the COSATI guidelines are available to all grantees from the Office of Sea Grant.

Audiovisual Documentation

Sea Grant Publication Guidelines apply to audiovisual documentation as well as to the printed word. Documentation may include any medium appropriate to the subject, including still photography, cinematography, TV tape recording, or sound.

Advance planning of documentation will ensure proper coverage. Because an important part of the Sea Grant mission is to transfer information from scientific and engineering specialists to commercial and other users who may not have scientific or engineering backgrounds, documentation should be planned with information transfer purposes in mind. The standard, usually static approach to scientific or engineering documentation generally is not the most suitable for such purposes, and it is recommended that coverage be planned jointly with advisory service specialists, who ultimately will be responsible for serving the user audiences. Institutional audiovisual specialists should be used when available to keep down costs, but outside professional assistance may be obtained when necessary to ensure proper documentation.

It should be noted that the intent of audiovisual documentation is to provide suitable photographs, motion pictures, or recordings of Sea Grant activi-

ties to be communicated to user audiences. These guidelines should not be construed as automatic sponsorship of completed filmes (scripted, sound tracked, and titled). Such complete films, while necessary in some cases, are expensive and must be the subject of fully justified separate proposals or negotiations with the Office of Sea Grant.

Costs of Information Transfer and Documentation

Costs related to documentation, publication, normal page charges, and special editorial treatment are appropriate expenditures under a Sea Grant. Funds for these purposes should be anticipated and included in proposed budgets. Funds for standard distribution also should be included in proposed budgets. When distribution exceeds the standard lists, as described in the next section, copies may be sold at a price to cover the cost of printing and mailing.

Distribution and Announcement of Publication

In addition to serving directly the audience that is interested in the information developed under a Sea Grant, institutions should provide for a full exchange of information with other Sea Grant institutions and certain other institutions or outlets, including NOAA, as specified below.

The Office of Sea Grant will maintain and distribute to grantees a basic standard mailing list for use by grantees in distribution of Sea Grant materials. Grantees should supplement the standard list according to their own distribution requirements to serve the appropriate user audiences.

All grantees should send material to the Sea Grant Depository (located in the Pell Marine Science Library, University of Rhode Island at Kingston, Rhode Island 02881), and to *Sea Grant 70's* (located at the Center for Marine Resources, Texas A&M University, College Station, Texas 77843).

As a general rule, Sea Grantees should include the cost of standard distribution of reports, reprints, and other documents as a budget item in proposals. Standard distribution is the list provided by the Office of Sea Grant, NOAA requirements, and any basic list maintained by the institution.

(1) Copies for NOAA Office of Sea Grant and NOAA Environmental Science Information Center

Five copies of all reprints, reports, proceedings, press releases, etc., should be sent to:

Office of Sea Grant
NOAA, U.S. Department of Commerce
Rockville, Maryland 20852

Single copies of photos, films, TV tapes, etc. should be sent.

To ensure that the scientific and technical material produced under Sea Grant is made available to the marine community at large, Sea Grant institutions should send fifty (50) copies of journal articles, technical reports, translations, conference procedings, individual conference papers, and monographs to:

Chief, Technical Information Division, D83
National Oceanic & Atmospheric Administration
Rockville, Maryland 20852

(2) NOAA Distribution and Announcement Services

The NOAA Technical Information Division performs the following functions:

(a) Announces the availability of publications by means of bibliographic references and abstracts in *NOAA Publications Announcements.* Copies of *NOAA Publication Announcements* are available free of charge from the above address.

(b) Distributes record copies for permanent availability in the NOAA Libraries.

(c) Distributes one copy of copyrighted material or 25 copies of non-copyrighted material to the National Technical Information Service (NTIS) (see below), accompanied by an abstract and bibliographic and indexing data. *Sea Grantees should not send copies of reports or papers to NTIS.*

(3) National Technical Information Service Distribution and Announcement Services

The National Technical Information Service (NTIS), (formerly the Clearinghouse for Federal Scientific and Technical Information) performs the following functions:

(a) Announces all reports and papers resulting from the Sea Grant Program in its announcement journals.

(b) Conducts literature searches.

(c) Sells magnetic tapes containing data on its acquisitions.

(d) Sells microfiche copies of all reports and papers which are not subject to copyright.

(e) Sells paper copies of all reports and papers

which are neither subject to copyright nor available from the Superintendent of Documents, U.S. Government Printing Office.

The NTIS charge for acquisitions and announcement of reports and papers originating from the Sea Grant Program will be borne by NOAA.

(4) Abstracting Services

In addition to those services described above, it is assumed that materials appearing in the literature routinely will be acquired through normal procedures by the national abstracting services, i.e. Chemical Abstracts, Biological Abstracts, etc., and hence will be known to the scientific and engineering communities. Consequently, no distribution to these abstracting services is required. Distribution will be made by the Chief, Technical Information Division, NOAA, to the Oceanic Research Institute for announcement in the Oceanic Citation Journal and the Oceanic Index at La Jolla, California. Copies of reports which are relevant to the area of fisheries and marine biology will be sent by NOAA to Commercial Fisheries Abstracts, Scientific Publications Staff, NOAA-National Marine Fisheries Service at Seattle, Washington.

Copyright

All manuscripts submitted for publication will include the following statement:

> This work is a result of research sponsored by NOAA Office of Sea Grant, Department of Commerce, under Grant #_____. The U.S. Government is authorized to produce and distribute reprints for governmental purposes notwithstanding any copyright notation that may appear hereon.

Sponsor Credit

Credit for *NOAA Sea Grant* sponsorship should be given in each publication. In the case of reports, identification of NOAA Sea Grant sponsorship should appear on the cover to assist processing personal at NOAA and other information centers to identify the Federal sponsor easily.

Special Materials

From time to time, Sea Grant Grantees will develop special materials not designed for publication, but for dissemination of information to specialized groups served by the institution (e.g., fishermen, seafood processors, coastal zone administrators) through extension or other personalized services. Sea Grant coordinators, project directors, and other responsible persons should consider the possible utility of such materials to other institutions, and as appropriate, announce their availability by letter to the appropriate mailing lists. The letter should contain an abstract or summary of the information, and the terms of its availability.

When a graduate dissertation or thesis is completed under Sea Grant funding, or when such a document produced under other auspices is of general Sea Grant interest, an abstract should be sent to the standard distribution list provided by the Office of Sea Grant with information on the document's availability.

In general, distribution of an abstract is recommended for all reports and published papers and for material of which limited copies are made such as films, photos, tapes, etc.

2. REPORTS REQUIRED UNDER SEA GRANTS

In addition to publications and other documenation resulting from research, curriculum development, or preparation of advisory service materials, *grant reports* are required in order to complete grant files and to account for the expenditures of funds under Sea Grants.

Sea Grant Project Reports

For each grant of one year or less, a brief final report is required summarizing activities and accomplishments and the use of the grant funds. Progress made toward objectives and goals in the proposal should be stated briefly and results summarized. Publications resulting from the grant may be appended or may be submitted later. Negative as well as positive results should be reported. While brief and succinct, the grant report should answer the question, "What did this grant produce?" As noted in the next section, the reports may be designed for public dissemination if the grantee wishes.

For grants of more than one year, a similar report is needed at the end of each year.

In each case, the report should be submitted within six months of the end of the reporting period.

Institutional and Coherent Project Annual Reports

For each 12-month Institutional or Coherent Project grant, a report is required, describing the activities pursued and the progress made toward objectives and goals. This annual report, due six months after the termination date of each grant,

serves multiple purposes and reaches a mixed audience.

While its primary purpose is to document the institution's year of Sea Grant activities, the annual report is not *the* document used for evaluation of the research (Volume II of the proposal, and publications deriving from the research, serve this purpose); hence, its value for informing various audiences can and should be considered in the report design and preparation. The style and format should be attractive and the content such that educated laymen, interested scientists, State or Federal officials, elected representatives and others, in addition to the Sea Grant staff, will find it useful in understanding the institution's objectives and achievements. Photographs, sketches, charts, etc., may be used, and a free-flowing, magazine-style narrative would be more appropriate than the usual scientific-journal style. The annual report may be likened to an annual report of a corporation to its stockholders.

Other elements of the annual report essential to conveying the full story of an institutional Sea Grant program are a listing of publications, employment records for technical and professional graduating classes and summaries of other educational activities, and a review of advisory services with accomplishments.

A general budget summary (by activity) is important. Just as a corporation prints its profit and loss statement in its annual report, so is a budget summary appropriate for illustrating degree of effort versus degree of achievement; similarly, the listing of published material will foster understanding of the products of the Sea Grant Program. In addition to scientific, technical, and advistory publications, such a listing might well include papers presented at conferences, special reports for workshops, and special audiovisual material. The criteria for such listing are best determined by the institution.

The degree of emphasis that each part of the program receives in the report is at the discretion of the institution, but significant achievements should be highlighted. For newly initiated activities with little progress to report, a sentence or two will suffice to inform the reader that the institution has such activities underway in its Sea Grant program. Negative results should be addressed, however briefly, rather than omitted.

Under the Sea Grant concept, a successful program often involves the active participation, not only of a variety of academic units inside and outside the institution itself, but also of Government and industry. It is important to credit and describe important contributions to the program from such outside sources.

Finally, in defiance of Parkinson's Law on the subject, there should be *some* relationship between the dollar size of the project being reported on and the amount of space devoted to it.

For uniformity among reporting institutions, the report should be printed in an 8½ X 11 inch format and saddle-stitch bound. Institutions are encouraged to apply principles of sound publications design to convey their message suitably and in an attractive manner. Somewhere on the front cover should appear a statement that the publication is "A report on the (name of institution) Sea Grant Program, for (inclusive dates)." This statement need not be the largest type on the cover. The institution may, if it wishes, make the report a part of a general publication series. The length of the publication will be determined by the magnitude of the program being reported, as well as by typography and design. A report is long enough when it achieves the purposes for which it is intended.

Expenses incurred in producing annual reports are properly a part of the administrative budget of a Sea Grant Program. However, nothing in this report requirement should be construed as encouraging lavish publications. The costs of a well-prepared, readable report may be higher than those for a strictly administrative document of similar length, and services not directly a part of the institution's Sea Grant administrative office may be required to achieve the desired degree of readability, but common fiscal prudence should control.

Distribution should be in accord with the publications guidelines, *except that an additional 20 copies should be sent to the National Sea Grant Office*. Other distribution should be accomplished by the institution to appropriate local and regional leaders. Quantities to be printed are best determined by the institution.

3. GUIDELINES FOR SUBMISSION AND DISSEMINATION OF ENVIRONMENTAL DATA COLLECTED UNDER SEA GRANTS

The potential value of the data which may be collected under Sea Grants warrants a systematic

procedure to assure that these data will be adequately documented, catalogued, and placed in the National Archives. Rapid and widespread dissemination of data by Sea Grantees is required.

As an integral part of Sea Grant proposal review, representatives from the appropriate national data repositories will, through the Sea Grant Director, contact the principal investigators of Sea Grant Projects or activities *expected to generate environmental (primarily oceanographic or meteorologic) data.* Based on the preliminary discussions, the parties will agree on the documentation required for each type of data to ensure meaningful interpretation by others, and the methods and formats whereby the data and ancillary information will be transmitted to the appropriate NOAA Environmental Data Service (EDS) Centers. The EDS representatives will submit to the Office of Sea Grant, with copies to the potential investigators, a summary of these discussions and the agreements reached.

Environmental data centers which NOAA has designated to handle Sea Grant data are the National Oceanographic Data Center (NODC), the National Geophysical Data Center (NGDC), and the National Climatic Center (NCC) of EDS.

The Smithsonian Oceanographic Sorting Center (SOSC), a part of the Smithsonian Institution, has also been designated a data center. NODC will be the lead center for data inventories, related documenation, and for chemical, geological, physical, and biological data; NGDC will be the lead center for geophysical data, NCC for meteorological data, and the SOSC for collections of biological specimens.

A first level inventory of data collected (a complete NAMDI form) is to be submitted to NODC as soon as possible (within thirty days) after completion of each cruise or data collection phase. EDS will provide instructions and forms for this purpose. The submission of NAMDI or equivalent forms will eliminate the necessity of compiling Report of Observations/Samples Collected by Oceanographic Programs (ROSCOP) forms or notifications to the International Data Exchange System (World Data Centers) where these would otherwise be required. The NAMDI information will be compiled by EDS for inclusion in *The International Journal of Marine Science* and for the World Data Center/Oceanography Index-Referral Service. The Environmental Data Service has agreed to publish annual summaries of NAMDI forms for all data collected.

After reviewing the NAMDI forms, EDS or SOSC will contact the data originator to work out the final details on types of data or samples to be transferred along with shipment schedules. Submission of the data and specimens by the originator to the appropriate repository is expected within a reasonable length of time after collection. Generally, this will be within six months in the case of raw data and original records which the data centers will copy and return, or within one year in the case of processed data. Data should be submitted with adequate documentation, including notes on instrumentation and calibrations to permit subsequent users to attain the greatest potential use of the information. In some cases, e.g., seismic reflection profiles, the original records may be sent to EDS for duplication. In such cases, the original records will be returned within approximately three weeks. At the request of the originator, EDS will permanently retain original records of the following types: navigational abstracts and trackline sheets; geophysical, XBT and STD strip charts; fathograms; and supplemental records which will permit subsequent users to evaluate and process original records.

A second level inventory will be required for data which cannot be shipped according to the schedule specified above, and for special classes of observations such as bottom photos and biological and geological samples. The details of this second level inventory will be worked out between the appropriate data center and the data originator.

At the request of the originator, *distribution of data by the data center may be delayed for a period of up to one year.* During the period of deferment, the data will not be made available to requesters without the written permission of the originator.

One copy of each published document based on Sea Grant *data* will be forwarded to NODC and each data center involved in the archiving of data or samples described in the document.

4. FISCAL REPORTS

A. The grantee shall submit three copies of a fiscal report at the end of each twelve months and three copies of a fiscal report at the completion of the grant. (When the grant period

is one year or less, only a final fiscal report is required.) Each fiscal report shall show all cumulative expended costs and be detailed in a format similar to that of the budget summary attached to the grant, including the identity of any cost categories distinct from the cost category elements identified in the grant budget summary.

B. The annual and/or final fiscal reports for this grant will include a certification, signed by an authorized official of the grantee institution, which reads essentially as follows:

> "I certify that all expenditures reported are for appropriate purposes and in accordance with the agreements set forth in the grant."

_____
Signature of an authorized official

C. If the final total program costs are less than originally contemplated, the ratio of Federal funds to grantee funds should be in approximately the same proportions as in the approved budget, and in no case may the grantee share be less than 1/3 of the total program costs. Amounts previously advanced or otherwise paid in excess of the grant amount payable must be refunded by check made payable to the U.S. Department of Commerce, National Oceanic and Atmospheric Administration.

5. PROGRAM ADMINISTRATION

A. The project leader or program director, operating within the established policies of the grantee institution, is responsible for the conduct of the program consistent with the general scheme of the proposal on which the grant is based. Project leaders are encouraged to seek the advice and opinion of the Sea Grant Office on problems that may arise. Such advice shall not relieve the project leader or program director of his responsibility for total program direction.

B. It is expected that grant funds will be expended in a manner which will be the most advantageous in the pursuit of program goals. Therefore, funds may be used for the proposed program with minor deviation from the grant budget summary; when major deviations from elements of the grant budget summary are contemplated, notice thereof and requests for approval should be submitted in writing to the Sea Grant Office. While the project leader may, with advance concurrence, change the directions of program inquiry when changes seem advantageous, the grantee institution shall give full consideration to the effects of any resulting budget reallocations on the matching and indirect cost portions of the budget since permissible or approved departures from the attached budget summary do not increase the amount of the grant.

C. The grant budget summary and grant period of performance are intended to be interrelated. However, in the event that the expenditure of effort (and related costs) is at a rate less than that contemplated at the time of grant issue or if in other respect progress of the grant program is delayed, and the grantee desires an extension of the grant period during which grant funds are to be expended, it is the policy of the Sea Grant Office to consider favorably requests for reasonable extension of the grant period. Extensions of the grant period shall be authorized in writing by NOAA.

D. Although the award of the grant is always intended to be for the full period of performance, there is a possibiity that the interests of the Government may necessitate partial or complete termination at an earlier time and, therefore, the Government reserves the right of termination. In the event such a possibility arises, wherever feasible prior to the issue of any notice of termination, the project leader and other appropriate grantee representatives will be consulted and the circumstances necessitating the proposed termination discussed. If the notice of termination must nevertheless be issued, it will wherever appropriate reflect the grantee's advice respecting the extent to which performance of work under the grant is to be terminated and the date(s) upon which the termination becomes effective, so as to avoid cancellation of outstanding grantee commitments which would not be in the best interests of the Government, including circumstances where such cancellations would result in grantee administrative expense and efforts, for example relating to settlement of vendor cancellation claims, which would exceed the benefits of cancellation. The cost principles applicable to the grant (see General Provision #7) will apply to costs under the grant if terminated. Amounts previously paid to the grantee which are no longer required under the terminated

grant will be refunded by check made payable to the U.S. Department of Commerce, National Oceanic and Atmospheric Administration.

E. The decision by the Department of Commerce as to whether it is interested in a proposed research project is based, to a considerable extent, upon its evaluation of the proposed project leader's knowledge of the field of study and his capabilities to manage the research project in an efficient and productive manner. Therefore, the Government desires that the project leader named in the agreement or in the proposal incorporated by attachment or by reference be continuously responsible for the conduct of the research project and be closely involved with the research efforts. Because of this desire, the following approvals or notifications shall be required:

(1) The institution shall obtain the Contracting Officer's Technical Representative's (COTR's) advance written approval to change the project leader or director, or to continue the research work during a continuous period in excess of three months without the participation of an approved project leader or director.

(2) The institution shall consult with the COTR or equivalent Sea Grant program/project office representative if the project leader plans to, or becomes aware that he will, devote substantially less effort to the work than anticipated in the approved proposal. If the agency determines that the reduction of effort would be so substantial as to impair the successful prosecution of the research, the Department of Commerce may request a change of project leader, may terminate the research effort, or may request other appropriate modification of the research agreement.

(3) When the project under this agreement involves co-leaders or otherwise includes more than one key person who may be considered essential to the conduct of the proposed research project, the provisions of E(1) and (2) are applicable to each such key person specifically identified in the agreement as key personnel.

F. Since the Government decision to support a proposed research project is based in part upon its evaluation of the capabilities of the project leader, as well as the support available to the project from his institution, such as facilities and administrative assistance, none of the research effort shall be subcontracted or transferred to another organization without the specific prior approval of the Contracting Officer or other authorized representative of the Department of Commerce for this purpose. The foregoing shall not be construed to authorize transfer of a research contract, or any interest therein, where prohibited by law. (This paragraph does not apply to the purchase of supplies, materials, equipment or general support services.)

6. ACCESS TO RECORDS AND RIGHT TO AUDIT

A. The grantee agrees that the Comptroller General of the United States or any of his duly authorized representatives and the Secretary of Commerce or any of his duly authorized representatives shall, until the expiration of three years after expenditure of grant funds under this grant, have access to and the right to examine any directly pertinent books, documents, papers and records of the grantee involving transactions related to this grant. The grantee agrees to include the substance of this paragraph into all subgrants and contracts payable from grant funds in whole or in part.

B. The grantee agrees that payment(s) made under the grant shall be subject to reduction:

(1) for amounts charged thereto which are found on the basis of audit examination not to constitute allowable cost under this grant, or (2) in the event amounts included in the non-Federal contributional share are found on the basis of audit examination not to constitute allowable non-Federal contribution and as a result the total amounts of payments exceed 66-2/3% of the total cost of the program supported by the grant, in the amount of such excess payment. The grantee shall refund by check payable to the U. S. Department of Commerce, NOAA, the amount of such reduction of payments under completed grants.

7. PRINCIPLES FOR DETERMINING APPLICABLE DIRECT AND INDIRECT COSTS

A. Principles to be applied by the Government for determining costs applicable to the grant, including standards to be applied by the Government in establishing the allowability of items involved in determining costs, shall be those set forth in Office of Management and Budget (OMB) Circular Number A-21, revised September 2, 1970, and as modified by Transmittal

Memorandum No. 1 dated March 30, 1971 (changed paragraphs J-3, J-13, and J-44, reproduced below):

J.3 CAPITAL EXPENDITURES. The costs of equipment, buildings, and repairs which materially increase the value or useful life of buildings or equipment, are unallowable except as provided for in the research agreement. Government funds shall not be used for the acquisition of land, or any interest therein, except with the specific prior approval of the sponsoring agency.

J.13 EQUIPMENT AND OTHER FACILITIES. The costs of permanent equipment or other facilities are allowable where such purchases are approved by the sponsoring agency concerned or provided for by the terms of the research agreement. Total expenditures for permanent equipment may not exceed 125 percent of the amount allotted for the permanent equipment category by the sponsoring agency (through an approved budget or other document) except with approval. The term "permanent equipment" shall mean an item of property which has an acquisition cost of $200 or more and has an expected service life of one year or more.

a. *General Purpose Equipment.* Approval must be obtained to acquire with Government funds any general purpose permanent equipment, i.e., any items which are usable for activities of the institution other than research, such as office equipment and furnishings, air conditioning, reproduction or printing equipment, motor vehicles, etc., or any automatic data processing equipment.

J.44 TRAVEL COSTS.

a. Travel costs are the expenses for transportation, lodging, subsistence, and related items incurred by employees who are in travel status on official business of the institution. Such costs may be charged on an actual basis, on a per diem or mileage basis in lieu of actual costs incurred, or on a combination of the two, provided the method used is applied to an entire trip and not to selected days of the trip, and results in charges consistent with those normally allowed by the institution in its regular operations.

b. Travel costs are allowable subject to c., d., e., and f. below, when they are directly attributable to specific work under a research agreement or are incurred in the normal course of administration of the institution or a department or research program thereof.

c. The difference in cost between first-class air accommodations and less than first-class air accommodations is unallowable except when less than first-class air accommodations are not reasonably available to meet necessary mission requirements, such as where less than first-class accommodations would (1) require circuitous routing, (2) require travel during unreasonable hours, (3) greatly increase the duration of the flight, (4) result in additional costs which would offset the transportation savings, or (5) offer accommodations which are not reasonably adequate for the medical needs of the traveler.

d. Costs of personnel movements of a special or mass nature are allowable only when authorized or approved in writing by the sponsoring agency or its authorized representative.

e. Foreign travel costs are allowable only when the travel has received specific prior approval. Each separate foreign trip must be specifically approved. For purposes of this provision, foreign travel is defined as "any travel outside of the United States and its territories and possessions."*

f. Expenditures for domestic travel may not exceed $500 per trip or 125 percent of the amount allotted for such travel by the sponsoring agency, whichever is greater, except with approval.

B. The approved budget summary attached to a grant (when actually made) indicates whether the indirect cost rate(s) is (are): (1) provisional and, therefore, subject to adjustment for final rates for the grant period; (2) predetermined fixed, and therefore, not subject to adjustment for the grant period; (3) predetermined fixed for a portion of the grant period and provisional for the remaining grant period; or (4) to be determined by another method authorized by OMB Circular No. A-21.

The establishment of indirect cost rates under a Sea Grant, where and to the extent not already established as predetermined fixed rates, shall be effected by the Department of Commerce in accordance with the policy of Office of Management and Budget Circular A-88, dated May 15, 1968.

* The Office of Sea Grant does not consider travel to Canada or Mexico for *research purposes* as "Foreign Travel."

Adjustment of provisional indirect cost rates to either predetermined fixed rates or other final established rates may result in any increase or decrease in the rate. If a decrease results, the excess indirect costs must be returned to NOAA, unless approval is received to rebudget to direct cost elements. If an increase results, it must be absorbed by the grantee unless unobligated grant funds are available for rebudgeting.

C. If any of the actions requiring approval in accordance with Circular No. A-21 have received specific Department of Commerce approval during the proposal and award process, a further approval shall not be required. Whenever practical, the approvals shall be given at the time of the project award or extension to avoid any delays during the course of the project.

In addition to those provided for in Circular A-21, only those approval requirements relating to expenditures under an agreement, set forth in the agreement (and which are in accordance with the deviation procedure of OMB Circular A-101), or as specifically required by statute, apply.

These provisions do not apply to agreement limitations or restrictions on total charges or total direct cost charges to the Government under this agreement.

8. ADDITIONAL CONDITION FOR INSTITUTIONS OF HIGHER EDUCATION

As required by the Federal law which appropriated the funds under which a Sea Grant is issued, it is a condition of the grant that if an institution of higher education receiving funds under the grant determines after affording notice and opportunity for hearing to an individual attending or employed by, such institution, that such individual has, after December 17, 1970, willfully refused to obey a lawful regulation or order of such institution and that such refusal was of a serious nature and contributed to the disruption of the administration of such institution, then the institution shall deny any further payment to, or for the benefit of, such individual.

9. CASH ADVANCES

A. Department of Commerce policy, implementing Treasury Department Circular No. 1075, dated April 10, 1969 (31 GFR Part 205), is to limit cash advances to grantees to those amounts needed to finance grantee's current operations. This policy, however, is not intended to burden grant administration and, therefore, requires consideration of the size of the amounts involved in the determination of the period of current operations, which in turn affects the frequency of cash advance processing actions. Accordingly, cash advance is authorized under this grant in accordance with the following:

1. When aggregate annual advances under a NOAA grant program total $250,000 or more, the timing and amount of cash advanced to a grantee is intended to be as close to the grantee's actual daily disbursements under the specific NOAA grant program as is administratively feasible. The vehicle for advances shall be consistent with Treasury Department Circular No. 1075, and, unless already established with the NOAA Finance Division, establishment of a letter of credit account will generaly be required accordingly. In the use of a letter of credit, the grantee agrees to (1) the practice of requesting cash drawdowns only as and when actually needed for its disbursements, and (2) timely reporting as required by the NOAA Administrator or his authorized representative for administration of cash advances under NOAA grant programs. Failure to adhere to these agreements may cause the unobligated (by the grantee) portion of the letter of credit to be revoked. The grantee shall initiate each drawdown at approximately the same time that checks are issued by the grantee in payment of program liabilities, and in an amount approximately equal to the Federal share of such payments, except that drawdowns shall not ordinarily be made more frequently than daily, or be in amounts less than $10,000.

2. When aggregate annual advances under a NOAA grant program total $100,000 but less than $250,000, amounts will be advanced monthly to meet the grantee's anticipated disbursement needs during the month under its grant(s) from a NOAA grant program. In requesting the amount of any but the initial advance, consideration shall be given by the grantee to the utilization of prior advances. (Accordingly, upward or downward revisions from month to month in the amount requested for monthly advance are to be made by the grantee whenever appropriate).

3. When aggregate annual advances under a NOAA grant program total $20,000 but less than $100,000, amounts will ordinarily be advanced quarterly to meet the grantee's anticipated disbursement needs during the quarter under its grant(s) from a NOAA grant program. (However, if the NOAA Administrator, or his authorized representative for administration of cash advances under NOAA grant programs, determines that monthly advances would be more advantageous to the Government, advances shall be made in that manner.) In requesting the amount of any but the initial advance, consideration shall be given by the grantee to the utilization of prior advances. (Accordingly, upward and downward revisions from quarter to quarter in the amount requested for quarterly advance are to be made by the grantee whenever appropriate.)

4. When aggregate annual advances under a NOAA grant program total less than $20,000, the initial advance will be limited to the grantee's anticipated disbursements for one year. For a grant or grants extending longer than one year, subsequent advances may fund the smaller of the remainder of the grant(s) or the estimated disbursements for the next year.

Under 2, 3 and (unless there are no anticipated disbursements beyond one year), 4, the size of an advance will be determined by the Government on the basis of the grantee's request* and, except for the initial advance, information provided by the grantee concerning disbursements under previous advances, for the periods described.

B. The grantee agrees that any cash advances which it may make under this grant to subgrantees shall conform substantially to the same standards of timing and amount as set forth in A. above.

C. The grantee agrees that such reviews of its financial practices may be made as are necessary to insure against excessive withdrawals of cash from the Treasury, and to require such agreement by subgrantees to whom the grantee makes cash advances.

D. Advances of funds must be deposited in the checking accounts maintained by the grantee. In no case will the funds so advanced be commingled with the personal funds of any of the officials of the grantee institution/organization, nor will any of the funds be deposited in personal bank accounts for disbursement by personal checks.

E. The grantee agrees to semiannually (as of June 30 and December 31) furnish identification number(s), total grant dollar amount, amount of cash advance(s) received, and cash balance of its grant(s) under NOAA grant programs to the Finance Division, National Oceanic & Atmospheric Administration, Rockville, Maryand 20852. Additional fiscal information, such as expenditures by cost elements, is not required for the purposes of this paragraph E.

* Submitted to the address in Paragraph E below, Attn: AD-571

10. RIGHTS TO INVENTION

Whenever any invention, which is or may be patentable, is conceived or first actually reduced to practice in the course of Sea Grant, the grantee shall furnish the Department of Commerce complete information thereon. Rights to the invention will be determined in accordance with the guidance and criteria established by the President's October 10, 1963, Memorandum and Statement of Government Patent Policy, 28 F.R. 10943, October 12, 1963. Copies may be obtained from the Administrative Officer, Office of Sea Grant. In applying this policy to grants, either one of two methods of determining rights generally will be used.

1. *Acquisition of Title.* By the first method, the Government normally will acquire title to the invention. This method will generally apply when (a) the principal purpose of the grant is to create, develop, or improve products, processes, or methods which are intended for commercial use (or which are otherwise intended to be made available for use) by the general public at home or abroad, or which will be required for such use by governmental regulation; or when (b) the principal purpose of the grant is for exploration into fields which directly concern the public health and welfare.

2. *Deferred Determination.* By the second method, the determination of rights in an invention will be deferred until after the invention has been identified. This method will apply when (a) the purpose of the grant is to build upon

existing knowledge or technology, to develop information, products, processes, or methods for use by the government, and (b) the work called for by the grant is in a field of technology in which the grantee has *not* acquired technical competence directly related to an area in which the grantee has an established non-governmental commercial position. When disclosing an invention, but not later than three months thereafter, the grantee may submit a written request for greater rights than the nonexclusive, irrevocable license. The request should include a statement of the grantee's intentions to bring the invention to the point of practical application as well as other information and facts concerning his capability to promote the utilization of the invention either directly through his own commercial use or indirectly through his licensing program.

Patent Right Clauses

1. The Patent Rights Contract Clause (Title) set forth in Appendix A., Department Administrative Order 208-14, issued and effective October 18, 1967; 32 F.R. 15890 dated November 18, 1967, is hereby incorporated by reference in this agreement, except that "Grantee" shall be substituted for each occurrence of "Contractor" in the clause.

2. The Patent Rights Contract Clause (Deferred) set forth in Appendix C., Department Administrative Order 208-14, issued and effective October 18, 1967; 32 F.R. 15890 dated November 18, 1967, is hereby incorporated by reference in this agreement, except that "Grantee" shall be substituted for each occurrence of "Contractor" in the clause.

11. NONDISCRIMINATION

1. This clause incorporates the assurances that the particular program will be conducted in compliance with appropriate requirements imposed by or pursuant to Part 8 of Subtitle A of Title 15 of the Code of Federal Regulations, which sets forth the Department of Commerce regulations which purpose is to effectuate the provisions of Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d-2000d.4). It is in the form and incorporates the contents specified by the responsible Department official for the Federal financial assistance program under which Federal financial assistance is provided.

2. Definitions for the purposes of this clause:
(a) "Department" means the Department of Commerce, and includes each of its primary organization and equivalent other units.
(b) "Secretary" means the Secretary of Commerce.
(c) "United States" means the States of the United States, the District of Columbia, Puerto Rico, the Virgin Islands, American Samoa, Guam, Wake Island, the Canal Zone, and the territories and possessions of the United States, and the term "State" means any one of the foregoing.
(d) "Person" means an individual in the United States who is or is to be a participant in or a beneficiary of the program which receives Federal financial assistance, and includes an individual who is an owner or member of a firm, corporation or other business or organization which is or is eligible to be a participant in or a beneficiary of such program.
(e) "Responsible Department official" with respect to the program receiving Federal financial assistance means the Secretary or other official of the Department who by law or by delegation has the principal authority within the Department for the administration of a law exending such assistance. It also means any officials so designated by due delegation of authority within the Department to act in such capacity with regard to the program under this clause.
(f) "Federal financial assistance" includes (1) grants of Federal funds, (2) the grant or donation of Federal property or interests in property, (3) the sale or lease of, or the permission to use (on other than a casual or transient basis), Federal property or any interest in such property or in property in which the Federal Government has an interest, without consideration, or at a nominal consideration, or at a consideration which is reduced, for the purpose of assisting the recipient, or in the recognition of the public interest to be served by such sale or lease to or use by the recipient.
(g) "Program" includes any program, project, or activity for the provision of services, financial aid, property or other benefits to persons, or for the provision of facilities for furnishing services, financial aid, property, or other benefits to persons, whether provided by the recipient of Federal financial assistance or with the aid of

any non-Federal funds, property, facilities or other resources provided to meet the conditions under which Federal financial assistance will be received. It includes programs supported by grants to recipients which make further grants to, or contracts with, participants in the program or to persons who are the ultimate beneficiaries.
(h) "Recipient" means any State, political subdivision of any State, or instrumentality of any State or political subdivision, or any public or private business or other agency, institution, organization, or other entity, or any individual, in any State, who applies for Federal financial assistance, or to whom Federal financial assistance is extended directly or through another recipient for or in connection with the program. Recipient further includes any successors, assigns, or transferees of any kind of the recipient, but does not include any ultimate beneficiary under the program.

3.-1 The recipient:

(a) Will not participate directly or indirectly (through contractual or other arrangements)

(1) in excluding any person in the United States, on the ground of race, color or national origin, from participating in, in denying the benefits of, or otherwise subjecting to discrimination under, the program to which this clause applies.

(2) in any act or course of conduct which on the ground of race, color or national origin:

(i) Denies to a person any service, financial aid, or other benefit provided under the program;

(ii) Provides any service, financial aid, or other benefit, to a person which is different, or is provided in a different manner, from that provided to others under the program;

(iii) Subjects a person to segregation or separate treatment in any matter related to his receipt of any such service, financial aid, property, or other benefit under the program;

(iv) Restricts the person in any way in the enjoyment of services, facilities, or any other advantage, privilege, property, or benefit provided to others under the program;

(v) Treats a person differently from others in determining whether he satisfies any admission, enrollment, quota, eligibility, membership, or other requirement or condition which persons must meet in order to be provided any service, financial aid, or other benefit provided under the program;

(vi) Denies a person an opportunity to participate in the program through the provision of property or services or otherwise, or affords him an opportunity to do so which is different from that afforded others under the program; and

(vii) Denies to the person the same opportunity or consideration given others to be selected or retained or otherwise to participate as a contractor or subcontractor when a program is applicable thereto.

(3) in utilizing criteria or methods of administration in determining the types of services, financial aid, or other benefits, or facilities which will be provided or the class of persons to whom, or the situations in which, such services financial aid, other benefits, or facilities will be provided, or the class of persons to be afforded an opportunity to participate in, the program to which this clause applies, which have the effect of subjecting persons to discrimination because of their race, color, or national origin, or have the effect of defeating or substantially impairing accomplishment of the objectives of the program as respect any persons of a particular race, color, or national origin.

Para. 3.-1(a) Notes:

1. As used herein, the services, financial aid, or other benefits provided under a program receiving Federal financial assistance shall be deemed to include any service, financial aid, or other benefit provided in or through a facility provided or connected with the aid of Federal financial assistance. 2. The enumeration of

specific forms of prohibited discrimination in subparagraphs (a)(2) and (a)(3) does not limit the generality of the prohibition in subparagraph (a)(1).

(b) Agrees to secure the compliance or to cooperate actively with the Department to secure the compliance by others with this nondiscrimination clause. For instance, the recipient may be requested by the responsible Department official to undertake and agree (i) to obtain or enforce, or to assist and cooperate actively with the responsible Department official in obtaining or enforcforcing, the compliance of contractors, subcontractors, lesees, and other parties subject to this part with the nondiscrimination required by this part and their respective contracts; (ii) to insert appropriate nondiscrimination clauses in the respective contracts with such parties; (iii) to obtain and to furnish to the responsible Department official such information as he may require for the supervision or securing of such compliance; (iv) to carry out sanctions for noncompliance with the obligations imposed upon contractors and other parties subject to this part; and (v) to comply with such additional provisions as the responsible Department official deems appropriate to establish and protect the interests of the United States in the enforcement of these obligations. In the event that the cooperating recipient becomes involved in litigation with a non-complying party as a result of such Departmental direction, the cooperating recipient may request the Department to enter into such litigation to protect the interests of the United States.

(c) Shall not take action that is calculated to bring about indirectly what this clause forbids it to accomplish directly.

(d) Gives the United States a right to seek Judicial enforcement of the provisions under this clause.

(e) If an institution of higher education or any other institution, insofar as this clause relates to the institution's practices with respect to admission of students or other treatment of persons participating in the program or its services or other benefits, agrees this clause shall be applicable to the entire institution unless the recipient establishes, to the satisfaction of the responsible Department official, that the institution's practices in designated parts or programs of the institution will in no way affect its practices in the program of the institution for which Federal financial assistance is or is sought to be provided, or the beneficaries of or participants in such program.

3.-2 Illustrations of the applicability of the discrimination prohibitions set forth in 3.-1 above to Federal financial assistance programs administered by the Department to which this clause may be made applicable by receipt of an assurance of compliance therewith and/or incorporation into the document of Federal financial assistance (e.g. the accepted grant award) are set forth on the Exhibit hereto.

4. Where the Federal financial assistance is to provide: (i) personal property, this clause shall be in effect for as long as the recipient retains ownership or possession of the property; and (ii) any other type or form of assistance, this clause shall be in effect for the duration of the period during which Federal financial assistance is extended to the program.

5. Provisions concerning cooperation, compliance reports and reviews, access to records, information, investigations, procedures effecting compliance, hearings, decisions and notices, judicial review, and supplemental instructions are set forth under Subpart B—General Compliance, sections 8.7 through 8.15,* of the aforementioned 15 CFR Subtitle A, Part 8, incorporated herein by attachment, and to the extent they concern the rights, obligations and responsibilities of the recipient, the recipient assures compliance or otherwise agrees therewith.

6. The recipient will include the provisions of

* Except that the following shall represent equivalent content to section 8.11(b), Noncompliance with section 8.5, for the purpose of this clause:

"if an applicant fails or refuses, as a condition to approval of and to the extension of Federal financial assistance, to furnish an assurance of compliance with this clause or otherwise fails or refuses to comply with a requirement imposed by or pursuant to this clause, Federal financial assistance may be refused in accordance with the procedures of paragraph (c) of this section. The Department shall not be required to provide assistance in such a case during the pendency of the administrative proceedings under said para."

paragraphs 1 through 5 in every subgrant, contract, subcontract or lease so that such provisions will be binding upon such subgrantee, contractor, subcontractor or lessee, when such subgrantee, contractor, subcontractor or lessee directly or indirectly receives reimbursement or payment from the Federal financial assistance provided under this specific program or non-Federal funds, property, facilities, or other resources provided to meet the conditions under which such Federal financial assistance will be received, but this requirement excludes contracts, subcontracts, or leases (including purchase orders) for commercial equipment, supplies or services (including utilities), the price for which is based on established catalog or market prices for such items or services sold in substantial quantities to the general public or is set by law or regulation, and such price is the sole consideration to be received by the contractor, subcontractor or lessee.

7. In addition to the explicit and implicit statements in this section affecting discrimination for reasons of race, creed, or national origin, discrimination against persons or reasons of sex are prohibited.

Exhibit to the Nondiscrimination Clause (see reference under para 3.-2)

Illustration—*Assistance programs to support the training of students.*

In student training programs, discrimination which is prohibited by recipients includes discrimination in the selection of persons to be trained and in their treatment by the recipients in any aspect of the educational process and discipline during their training, or in the availability or use of any academic, housing, eating, recreational, or other facilities and services, or in financial assistance to students furnished or controlled by the recipients or incidental to the program. In any case where selection of trainees is made from a predetermined group, such as the students in an institution or area, the group must be selected without discrimination.

Illustration—*Assistance programs to support research and distribute its results.*

In programs under which individuals, educational or other institutions, or business entities receive Federal financial assistance in order to encourage or foster research activities as such, or to obtain thereby technical or other information, products, or services which are to be made available to others, but where such program does not constitute Government procurement of property or services, discrimination is prohibited by recipients with respect to the choice, retention or treatment of any person, including the provision of services or financial aid to them, participating in the research activities, and, further, with respect to their dissemination to any person of the results of the research, whether in the form of information, products, services, or otherwise. If a research grant is made to an educational institution under which it is expected that students or others will participate in the research as a part of their experience or training, on a compensated or uncompensated basis, there shall be no discrimination in admission of students to, or in their treatment by, that part of the school from which such students are drawn or in the selection otherwise of trainees.

12. STATUTORY LIMITS ON PAYMENT OF SEA GRANT FUNDS

The total amount of payments under a Sea Grant shall not exceed 66 2/3% of the total cost of the program supported by the grant. For purposes of computing the amount of the total cost of the program furnished by the grantee (including contributions of a non-Federal third party), the Government shall include in such computation an amount equal to the reasonable value of any buildings, facilities, equipment, supplies, or services provided by the grantee with respect to the program (but not the cost or value of land or of Federal contributions).

13. TITLE TO EQUIPMENT

Title to equipment purchased or fabricated under an agreement shall be vested in the institution, upon acquisition, without further obligation to the Government unless: (1) it is determined that such vesting is not in furtherance of the objectives of the Department of Commerce, or (2) there is not proper authority to vest title in the institution. The agreement will elsewhere specifically and clearly set forth when and to what extent title to any equipment is to vest in

the Government, and wherever practicable will identify such items of equipment, if not applicable to all equipment.

However, the Department of Commerce, through its authorized representative, may desire to reserve the right to require the institution to transfer title to items of equipment to the Governmen or to a third party named by the Government, where such third party is otherwise eligible under existing statutes, which right may be exercised at any time, but no later than twelve months after the Department of Commerce has received a final fiscal report (or special equipment acquisition report, if required by the Department of Commerce) from the institution after completion or termination of the project covered by the agreement, but such right shall not apply to any items of equipment with an acquisition cost of less than $1,000. Such reservation will be cearly and specifically set forth elsewhere in the agreement.

14. OFFICIALS NOT TO BENEFIT

No member of or delegate to Congress, or resident Commissioner, shall be admitted to any share or part of this grant or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this grant if made with a corporation, educational, or non-profit institution for its general benefit.

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